

Exhibit H

Exhibit H - U.S. Patent No. 9,215,613 (“’613 Patent”)

Accused Instrumentalities: smartphones, basic phones, tablets, laptops, and hotspot devices sold (including those sold in bundles with data plans) or used by Verizon and all versions and variations thereof (“Accused Instrumentalities”) since the issuance of U.S. Pat. No. 9,215,613 (the “Asserted Patent”).

Claim 1

Claim	Public Documentation
[1pre] A wireless end-user device, comprising:	<p>The Accused Instrumentalities include “A wireless end-user device, comprising.”</p> <p>For example, Verizon sells and uses devices described by Verizon’s website below (e.g., devices made by Samsung, Apple, Motorola, Google, and Kyocera). These devices constitute a wireless end-user device as described in claim 1. <i>See, e.g.</i>: https://www.verizon.com/shop/online/5g-cell-phones/apple/:</p>

Claim

Public Documentation

The screenshot displays the Verizon website's 'Shop Apple smartphones' page. The top navigation bar includes 'Personal' and 'Business' tabs, a 'Stores' link, and a 'Español' language option. A red checkmark logo is on the left, and 'Shop', 'Why Verizon', and 'Support' links are in the center. On the right, there are 'Sign in' and 'Search' buttons. Below the navigation bar, a promotional banner reads: 'Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. [Shop now](#) [Offer Details](#)'. The breadcrumb trail shows 'Home / Smartphones / Apple'. On the right side of the page, there are icons for 'Chat', 'Video Call', and 'Call'. The main heading is 'Shop Apple smartphones'. Below this, there are filter tabs: 'All', 'Free phones', 'Samsung', 'Apple' (which is selected), 'Motorola', 'Google', and 'Kyocera'. A toggle switch for 'Lowest price with trade-in offer' is set to 'off'. It shows '30 results' and a 'Sort by: Featured' dropdown menu. A filter bar at the top of the results shows 'Apple' with a close button and a 'Clear all' link. On the left, a 'Filter' sidebar lists categories: 'Brand (1)' with a checkmark for 'Apple (30)', 'OS', 'Special Offers', 'In Store Pickup', and 'Price'. The main content area shows three product cards. The first card is for the 'Apple iPhone 15 Pro', starting at \$27.77/mo for 36 months, 0% APR, with a retail price of \$999.99. The second card is for the 'Apple iPhone 15 Pro Max', starting at \$33.33/mo for 36 months, 0% APR, with a retail price of \$1199.99. Both cards have a 'Compare' button and a heart icon. The third card is a promotional banner for 'Titanium iPhone 15 Pro' with the text: 'Get it on us. With any iPhone trade-in. Any model. Any condition. Guaranteed. With Unlimited Ultimate. [Details](#)'. It also has a 'Buy >' button.

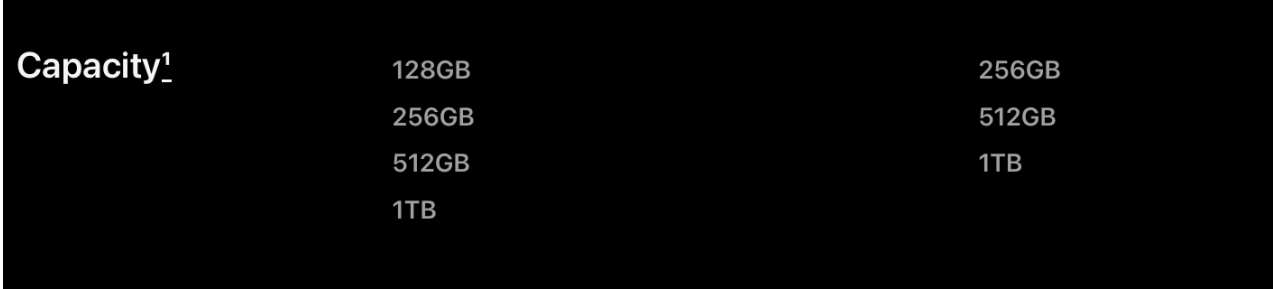
As a specific example, Apple's devices, including the Apple iPhone 15 Pro, are wireless end-user devices which run the Apple iOS Operating System. *See, e.g.,* <https://www.verizon.com/smartphones/apple-iphone-15-pro/>:





Claim	Public Documentation
	<p data-bbox="606 264 932 313">Performance</p> <p data-bbox="606 396 739 435">Storage</p> <p data-bbox="606 444 1293 477">128GB, 256GB, 512GB, 1TB (Subject to availability)</p> <hr data-bbox="606 548 1913 555"/> <p data-bbox="606 631 663 665">OS</p> <p data-bbox="606 680 747 712">Apple iOS</p> <hr data-bbox="606 784 1913 790"/> <p data-bbox="606 867 684 901">Wi-fi</p> <p data-bbox="606 915 659 948">Yes</p> <hr data-bbox="606 1019 1913 1026"/> <p data-bbox="585 1135 1990 1386">Verizon sells smartphones on https://www.verizon.com/smartphones. Verizon sells “basic” phones on https://www.verizon.com/basic-phones. Verizon sells hotspot devices on https://www.verizon.com/internet-devices. Verizon sells laptops and tablets on https://www.verizon.com/tablets. For further example, the Apple iPhone 15 Pro model is sold or used by Verizon and includes 128GB, 256GB, 512GB, or 1TB of memory storage, in which control policies for applications are stored. <i>See, e.g.,</i> https://www.apple.com/iphone-15-pro/specs/:</p>

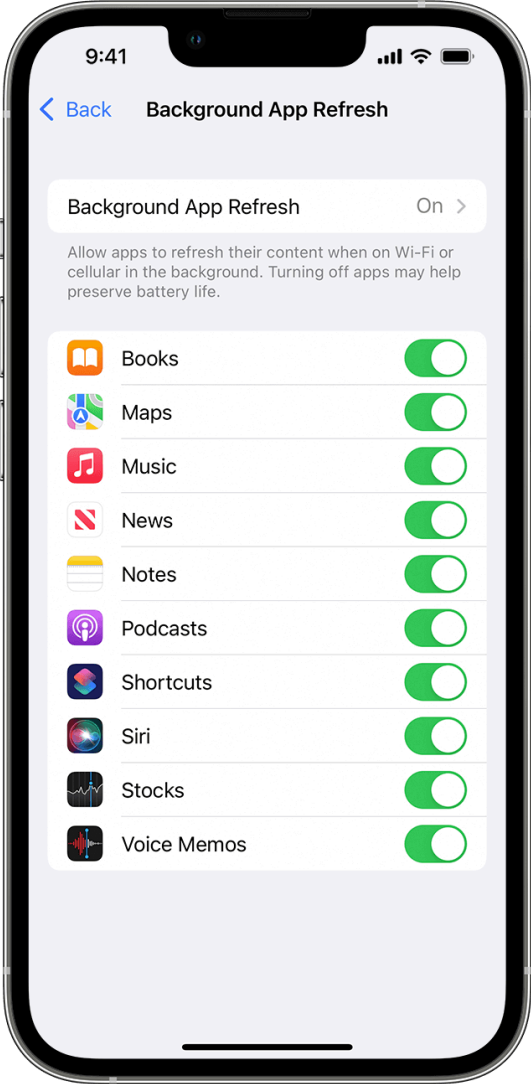
Claim	Public Documentation								
	<div data-bbox="590 240 1850 526"> <p>Capacity¹</p> <table> <tr> <td>128GB</td><td>256GB</td></tr> <tr> <td>256GB</td><td>512GB</td></tr> <tr> <td>512GB</td><td>1TB</td></tr> <tr> <td>1TB</td><td></td></tr> </table> </div> <p>For further example, the Apple iPhone 15 Pro model has a A17 Pro Chip. <i>See, e.g.,</i> https://www.apple.com/iphone-15-pro/specs/</p> <div data-bbox="590 634 1829 920"> <p>Chip</p> <div data-bbox="926 704 1094 867"> <p>A17 PRO</p> </div> <ul style="list-style-type: none"> A17 Pro chip New 6-core CPU with 2 performance and 4 efficiency cores New 6-core GPU New 16-core Neural Engine </div>	128GB	256GB	256GB	512GB	512GB	1TB	1TB	
128GB	256GB								
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<p>[1a] a wireless wide area network (WWAN) modem to communicate data for Internet service activities between the device and at least one WWAN, when configured for and connected to the WWAN;</p>	<p>The Accused Instrumentalities include “a wireless wide area network (WWAN) modem to communicate data for Internet service activities between the device and at least one WWAN, when configured for and connected to the WWAN.” This WWAN modem in the Accused Instrumentalities provides a connection to a Verizon’s wireless network.</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, are sold or used by Verizon and comprise a wireless modem for communicating with mobile service base stations. <i>See, e.g.,</i> https://www.apple.com/iphone-15-pro/specs/:</p>								

Claim	Public Documentation										
	<table border="1"> <thead> <tr> <th>Model</th><th>Public Documentation</th></tr> </thead> <tbody> <tr> <td>Cellular and Wireless</td><td></td></tr> <tr> <td>Model A2848*</td><td> 5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz) </td></tr> <tr> <td>Model A2849*</td><td> 5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz) </td></tr> <tr> <td>All models</td><td> 5G (sub-6 GHz and mmWave) with 4x4 MIMO⁹ Gigabit LTE with 4x4 MIMO and LAA⁹ Wi-Fi 6E (802.11ax) with 2x2 MIMO¹⁰ Bluetooth 5.3 Second-generation Ultra Wideband chip¹¹ Thread networking technology NFC with reader mode Express Cards with power reserve </td></tr> </tbody> </table>	Model	Public Documentation	Cellular and Wireless		Model A2848*	5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz)	Model A2849*	5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz)	All models	5G (sub-6 GHz and mmWave) with 4x4 MIMO ⁹ Gigabit LTE with 4x4 MIMO and LAA ⁹ Wi-Fi 6E (802.11ax) with 2x2 MIMO ¹⁰ Bluetooth 5.3 Second-generation Ultra Wideband chip ¹¹ Thread networking technology NFC with reader mode Express Cards with power reserve
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<p>[1b] a wireless local area network (WLAN) modem to communicate data for Internet service activities between the device and at least one WLAN, when configured for and connected to the WLAN;</p>	<p>The Accused Instrumentalities include “a wireless local area network (WLAN) modem to communicate data for Internet service activities between the device and at least one WLAN, when configured for and connected to the WLAN.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, are sold or used by Verizon and comprises a wi-fi modem for communicating over a wi-fi networks. <i>See, e.g.,</i> https://www.apple.com/iphone-15-pro/specs/:</p>										

Claim	Public Documentation
	<div data-bbox="590 240 1740 1141"> <div> Cellular and Wireless </div> <div> Model A2848* </div> <div> 5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz) </div> <div> Model A2849* </div> <div> 5G NR (Bands n1, n2, n3, n5, n7, n8, n12, n14, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n53, n66, n70, n71, n75, n76, n77, n78, n79) 5G NR mmWave (Bands n258, n260, n261) FDD-LTE (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 29, 30, 32, 66, 71) TD-LTE (Bands 34, 38, 39, 40, 41, 42, 46, 48, 53) UMTS/HSPA+/DC-HSDPA (850, 900, 1700/2100, 1900, 2100 MHz) GSM/EDGE (850, 900, 1800, 1900 MHz) </div> <div> All models </div> <div> 5G (sub-6 GHz and mmWave) with 4x4 MIMO⁹ Gigabit LTE with 4x4 MIMO and LAA⁹ Wi-Fi 6E (802.11ax) with 2x2 MIMO¹⁰ Bluetooth 5.3 Second-generation Ultra Wideband chip¹¹ Thread networking technology NFC with reader mode Express Cards with power reserve </div> </div>
[1c] a non-transient memory to store	<p>The Accused Instrumentalities include “a non-transient memory to store.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, comprise a memory. As a specific example, the iPhone 15 Pro sold or used by Verizon includes 128GB, 256GB, 512GB, or 1TB of memory storage, in which control policies for applications are stored. <i>See, e.g.,</i> https://www.apple.com/iphone-15-pro/specs/:</p>

Claim	Public Documentation
	
<p>[1d] a differential traffic control policy list distinguishing between a first one or more applications resident on the device and a second one or more applications and/or services resident on the device, and</p>	<p>The Accused Instrumentalities comprise “a differential traffic control policy list distinguishing between a first one or more applications resident on the device and a second one or more applications and/or services resident on the device.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, run the Apple iOS Operating System, which comprise at least Apple’s “Background App Refresh” and “Low Power Mode” features include policies which distinguish between applications and/or services. <i>See, e.g.</i>, https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div data-bbox="583 240 1963 410"><div>Personal Business</div><div>Stores Español</div><div> Shop Why Verizon Support</div><div>Sign in  Search </div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div> <div data-bbox="604 435 840 451">Support > Apple > Apple iPhone 7 Plus</div> <div data-bbox="625 492 1381 576"><h2>Apple iPhone - Turn Background App Refresh On / Off</h2></div> <div data-bbox="653 654 707 670">NOTE</div> <div data-bbox="653 680 1337 724"><p>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</p></div> <div data-bbox="627 784 1251 1000"><ol style="list-style-type: none">1. From a Home screen on your Settings  General. → If an app isn't available on your Home screen, swipe left to access the App Library.2. Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">• Off• Wi-Fi• Wi-Fi and Cellular Data</div> <div data-bbox="583 1029 1144 1063"><p>https://support.apple.com/en-us/HT202070:</p></div>

Claim	Public Documentation
	<div><div><div><h2>Use Background App Refresh</h2><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p><p>https://support.apple.com/en-us/HT205234:</p></div></div><div></div></div>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

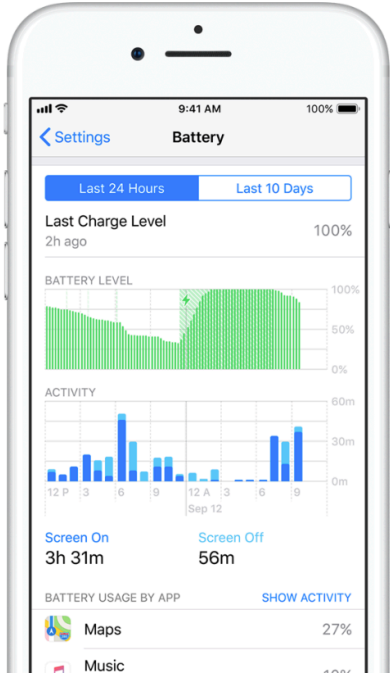
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.










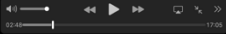

1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).

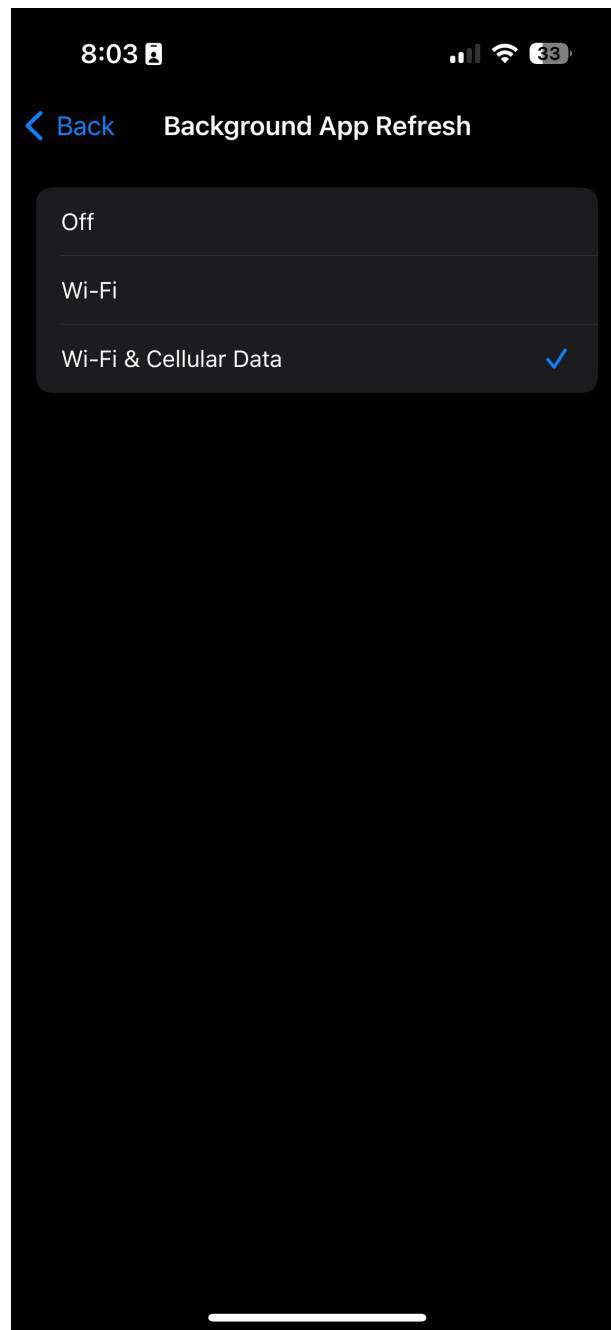
2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.


Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>; https://support.apple.com/en-us/HT213336; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/extending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/backgroundtasks/; https://developer.apple.com/documentation/watchkit/background_execution/using_background_tasks/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/prepar-</p>





Claim	Public Documentation
	<p> ing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks/bgappprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocessingtask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/watchkit/background_execution; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/devicemanagement/mail; https://developer.apple.com/documentation/security/secure_transport/using_the_secure_socket_layer_for_network_communication; https://developer.apple.com/documentation/networkextension/personal_vpn; https://developer.apple.com/documentation/foundation/nsproxy; https://developer.apple.com/documentation/messages; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063/; </p>

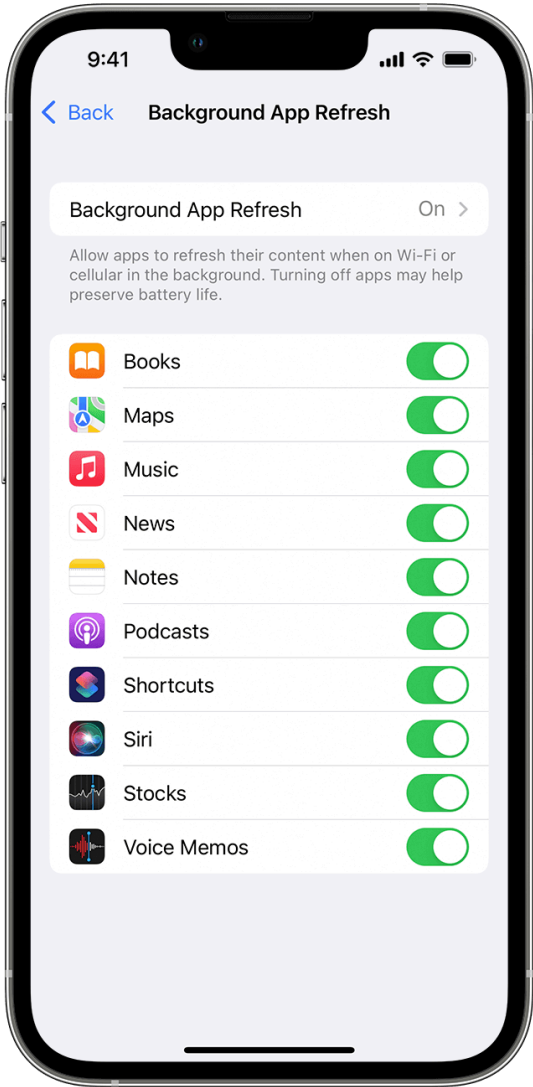
Claim	Public Documentation
	<div><h2>Factors affecting your runtime</h2><div>Critically low batteryBackground App Refresh switchAirplane modeLow Power ModeOngoing iCloud restoreSettingsDisplay on/off stateDevice temperatureSystem budgetsProcess contentionApp usageApp switcherRate limitingCamera in-useDevice lock state</div></div>

Claim	Public Documentation
	<div data-bbox="585 238 1822 933"><h3>Top factors</h3><ul style="list-style-type: none"> Critically low battery Low Power Mode App usage App switcher Background App Refresh switch System budgets Rate limiting</div> <p data-bbox="585 938 1104 971">; see also exemplary screen shots below:</p>



Claim	Public Documentation
	 <p>The image shows three Apple Watch screens side-by-side. The first screen is the 'Settings' menu, showing options for General, Do Not Disturb, and Airplane Mode. The second screen is the 'General' settings menu, showing options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen is the 'Background App Refresh' settings menu, showing a toggle switch for 'Background App Refresh' which is currently turned off. Below the screens, there is a line of text: 'See also, e.g., https://www.verizon.com/plans/; https://www.verizon.com/business/products/plans/; https://www.verizon.com/plans/international/international-travel/; https://www.verizon.com/support/international-travel-faqs/.'</p>
<p>[1e] a differential traffic control policy applicable to at least some Internet service activities by or on behalf of the first one or more applications;</p>	<p>The Accused Instrumentalities comprises “a differential traffic control policy applicable to at least some Internet service activities by or on behalf of the first one or more applications.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, run the Apple iOS Operating System, which comprise at least Apple’s “Background App Refresh” and “Low Power Mode” features include policies which apply to at least some activities by or on behalf of applications and/or services. <i>See, e.g.,</i> https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div></div><div>ShopWhy VerizonSupport</div><div>Sign inSearch</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div>Support > Apple > Apple iPhone 7 Plus</div><div><h2>Apple iPhone - Turn Background App Refresh On / Off</h2></div><div><div>NOTE<p>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</p></div></div><div><div><div>1. From a Home screen on your Settings  General.</div><div>→ If an app isn't available on your Home screen, swipe left to access the App Library.</div></div><div><div>2. Tap Background App Refresh twice then tap one of the following:</div><div>→ When low power mode is on, the background app refresh is disabled.</div><div><div>• Off</div><div>• Wi-Fi</div><div>• Wi-Fi and Cellular Data</div></div></div></div><div>https://support.apple.com/en-us/HT202070:</div></div>

Claim	Public Documentation
	<div><div><div><h2>Use Background App Refresh</h2><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p><p>https://support.apple.com/en-us/HT205234:</p></div></div><div></div></div>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

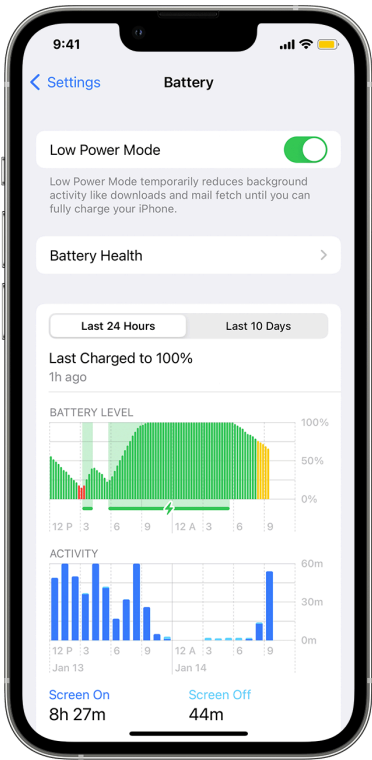
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

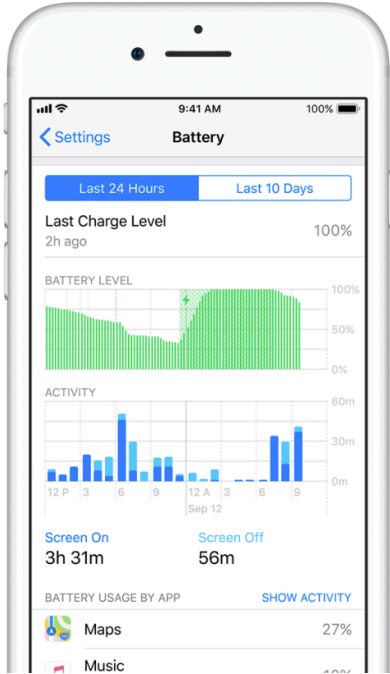
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.










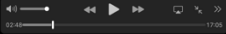

1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).

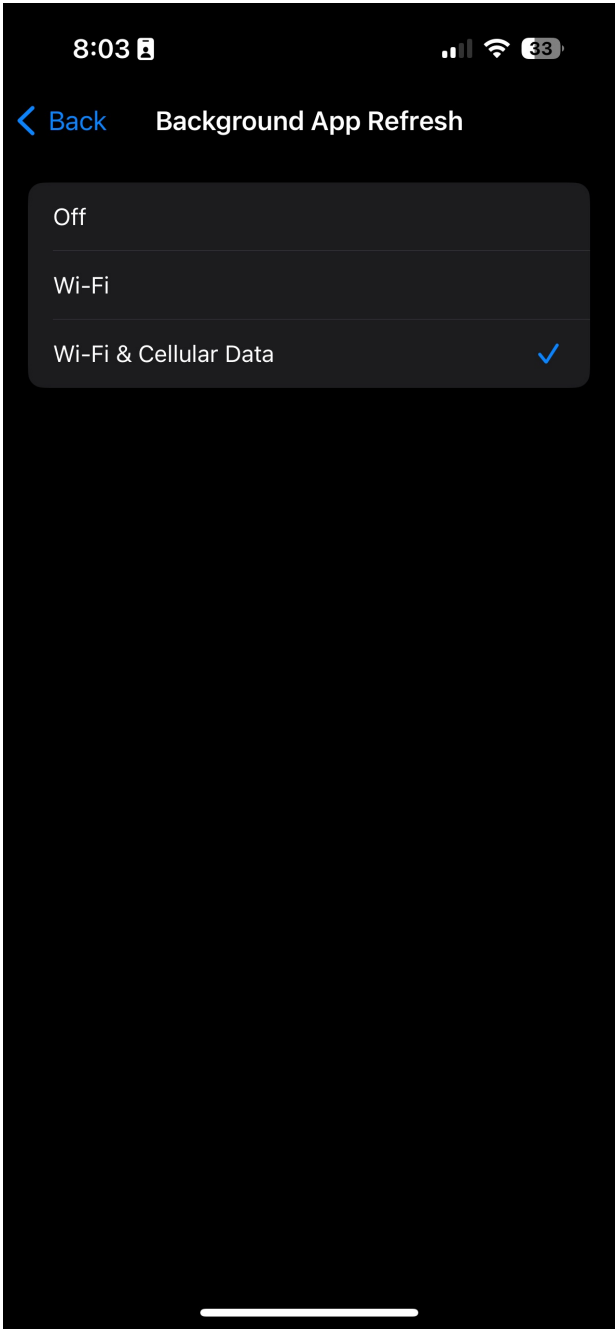
2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.

Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>;</p> <p>https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/extending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/backgroundtasks/; https://developer.apple.com/documentation/watchkit/background_execution/using_background_tasks/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/prepar-</p>





Claim	Public Documentation
	<p>ing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks/bgapprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocesstask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/devicemanagement/mail; https://developer.apple.com/documentation/security/secure_transport/using_the_secure_socket_layer_for_network_communication/; https://developer.apple.com/documentation/networkextension/personal_vpn; https://developer.apple.com/documentation/foundation/nsproxy; https://developer.apple.com/documentation/messages/; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback/; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063/;</p>

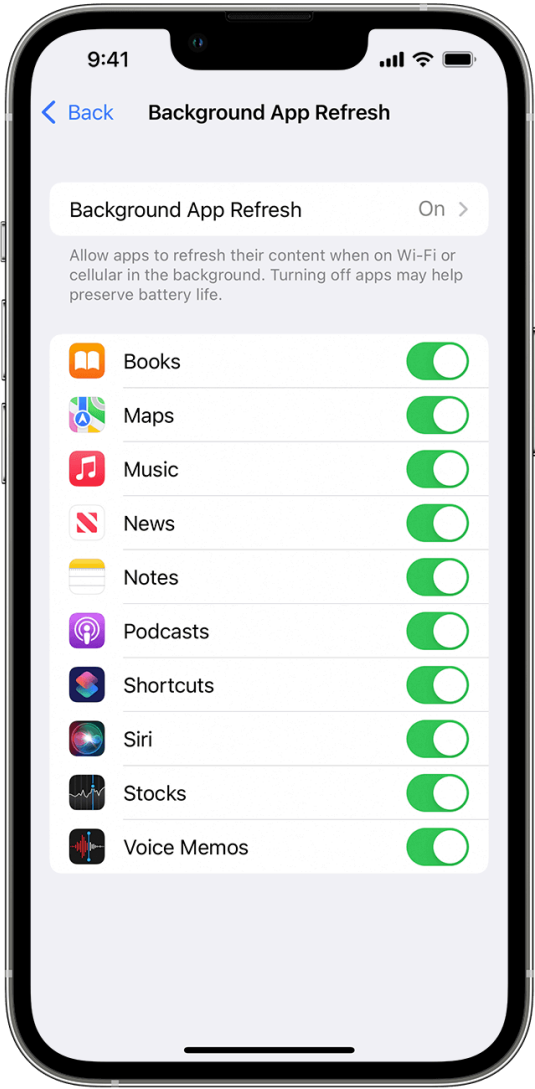
Claim	Public Documentation
	<div data-bbox="585 237 1822 935"><h3>Factors affecting your runtime</h3><div>Critically low battery Background App Refresh switch Airplane mode</div><div>Low Power Mode Ongoing iCloud restore Settings Display on/off state</div><div>Device temperature System budgets Process contention App usage</div><div>App switcher Rate limiting Camera in-use Device lock state</div><div><div></div><div>02:1017:08</div></div></div>

Claim	Public Documentation
	<div data-bbox="585 238 1822 933"><h3>Top factors</h3><ul style="list-style-type: none"> Critically low battery Low Power Mode App usage App switcher Background App Refresh switch System budgets Rate limiting</div> <p data-bbox="585 938 1106 971">; see also exemplary screen shots below:</p>



Claim	Public Documentation
	 <p>The image shows three Apple Watch screens side-by-side. The first screen is the 'Settings' menu, showing options for General, Do Not Disturb, and Airplane Mode. The second screen is the 'General' settings menu, showing options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen is the 'Background App Refresh' settings menu, showing a toggle switch for 'Background App Refresh' which is currently turned off. Below the screens, there is a line of text: 'See also, e.g., https://www.verizon.com/plans/; https://www.verizon.com/business/products/plans/; https://www.verizon.com/plans/international/international-travel/; https://www.verizon.com/support/international-travel-faqs/.'</p>
<p>[1f] an interface to allow a user to augment the differential traffic control policy for the first one or more applications but not for the second one or more applications and/or services; and</p>	<p>The Accused Instrumentalities include “an interface to allow a user to augment the differential traffic control policy for the first one or more applications but not for the second one or more applications and/or services.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, sold or used by Verizon include an interface which allow users to augment policies and settings for some applications and/or services, but not all applications and/or services (e.g., system services). <i>See, e.g.,</i> https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div></div><div>ShopWhy VerizonSupport</div><div>Sign inSearch</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div><div>Support > Apple > Apple iPhone 7 Plus</div><div><h1>Apple iPhone - Turn Background App Refresh On / Off</h1><div><div>NOTE</div><div>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</div></div><div><div>1. From a Home screen on your Settings  General. → If an app isn't available on your Home screen, swipe left to access the App Library.</div><div>2. Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">OffWi-FiWi-Fi and Cellular Data</div></div><div>https://support.apple.com/en-us/HT202070:</div></div></div></div>

Claim	Public Documentation
	<div data-bbox="606 305 1297 363"><h2>Use Background App Refresh</h2></div> <div data-bbox="606 391 1377 639"><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p></div> <div data-bbox="606 672 1373 878"><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p></div> <div data-bbox="588 1377 1144 1412"><p>https://support.apple.com/en-us/HT205234:</p></div> <div data-bbox="1436 261 1967 1343"></div>

Use Low Power Mode to save battery life on your iPhone or iPad


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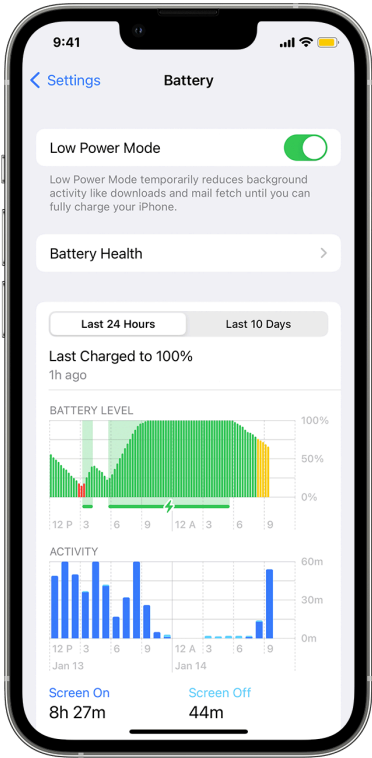
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

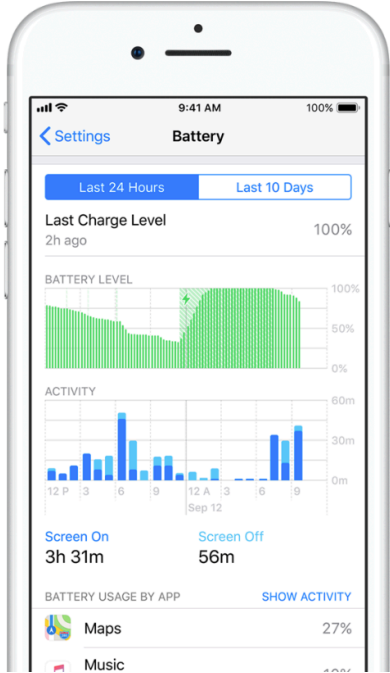
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.








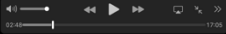



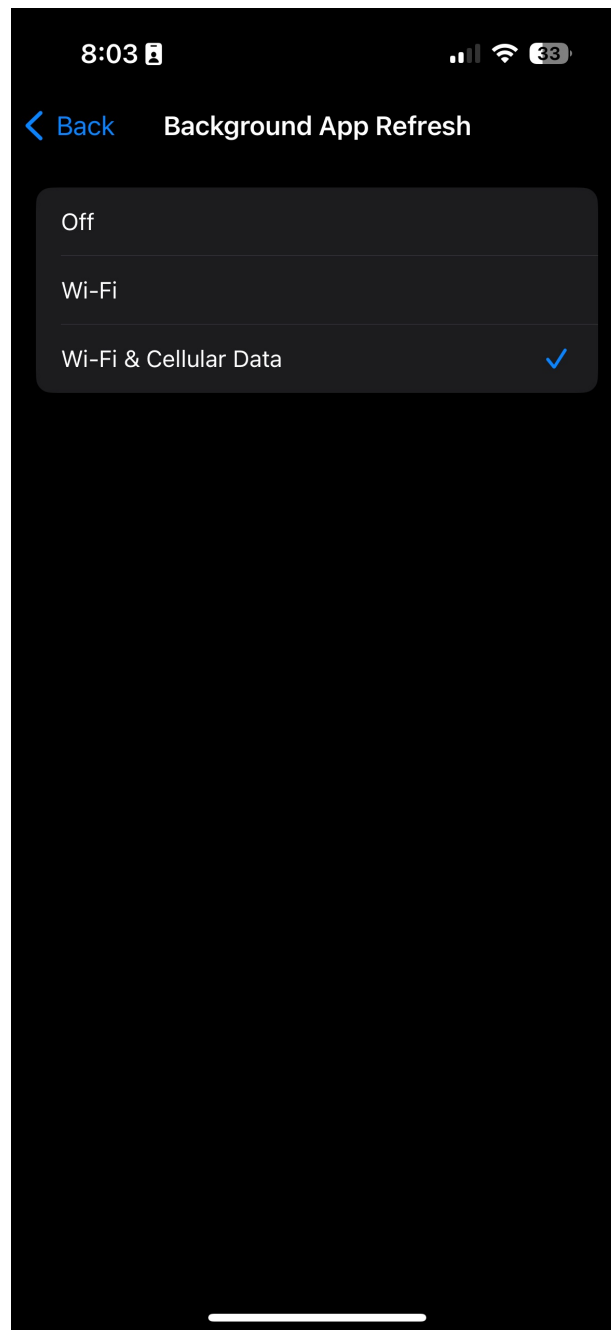
1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).



2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.





Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data. <p>; https://developer.apple.com/videos/play/wwdc2020/10063:</p> 

Claim	Public Documentation
	<div><h3>Factors affecting your runtime</h3><div>Critically low batteryBackground App Refresh switchAirplane mode Low Power ModeOngoing iCloud restoreSettingsDisplay on/off state Device temperatureSystem budgetsProcess contentionApp usage App switcherRate limitingCamera in-useDevice lock state</div></div>

Claim	Public Documentation
	<div data-bbox="585 237 1822 933"><h3>Top factors</h3><ul style="list-style-type: none"> Critically low battery Low Power Mode App usage App switcher Background App Refresh switch System budgets Rate limiting</div> <p data-bbox="585 938 1106 971">; see also exemplary screen shots below:</p>



Claim	Public Documentation
	
[1g] one or more processors configured to	<p>The Accused Instrumentalities include “one or more processors.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, comprise one or more processors. As a specific example, the iPhone 15 Pro has an A17 Pro Chip. <i>See, e.g.</i>, https://www.apple.com/iphone-15-pro/specs/</p> <div data-bbox="583 1081 1827 1369"><div>Chip</div><div></div><div><p>A17 Pro chip</p><p>New 6-core CPU with 2 performance and 4 efficiency cores</p><p>New 6-core GPU</p><p>New 16-core Neural Engine</p></div></div>

Claim	Public Documentation
[1h] classify a wireless network to which the device currently connects in order to communicate data for Internet service activities as at least one of a plurality of network types that the device can connect with,	<p>The Accused Instrumentalities “classify a wireless network to which the device currently connects in order to communicate data for Internet service activities as at least one of a plurality of network types that the device can connect with.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, sold and used by Verizon classify wireless network connections for communicating internet service activities. <i>See, e.g.,</i> https://www.verizon.com/support/knowledge-base-207174/:</p> <div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div></div><div>ShopWhy VerizonSupport</div><div>Sign inSearch</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div> <p>Support > Apple > Apple iPhone 7 Plus</p> <h2>Apple iPhone - Turn Background App Refresh On / Off</h2> <div><div>NOTE</div><div>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</div></div> <ol style="list-style-type: none">From a Home screen on your Settings  General. → If an app isn't available on your Home screen, swipe left to access the App Library.Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">OffWi-FiWi-Fi and Cellular Data <p>https://support.apple.com/en-us/HT202070; https://support.apple.com/en-us/HT205234;</p>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

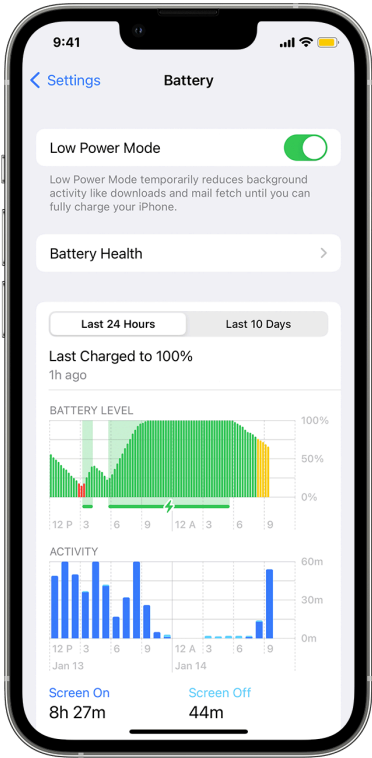
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

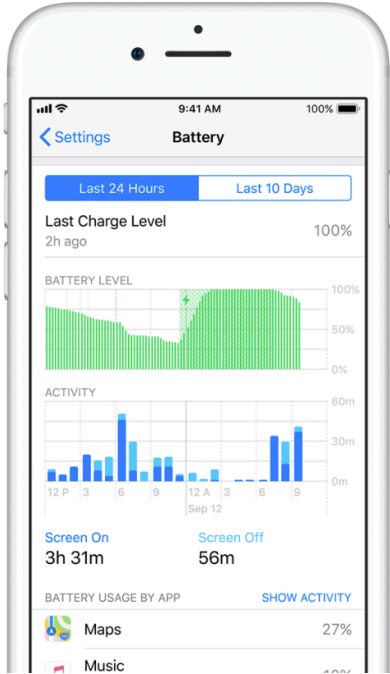
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.










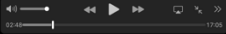

1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).

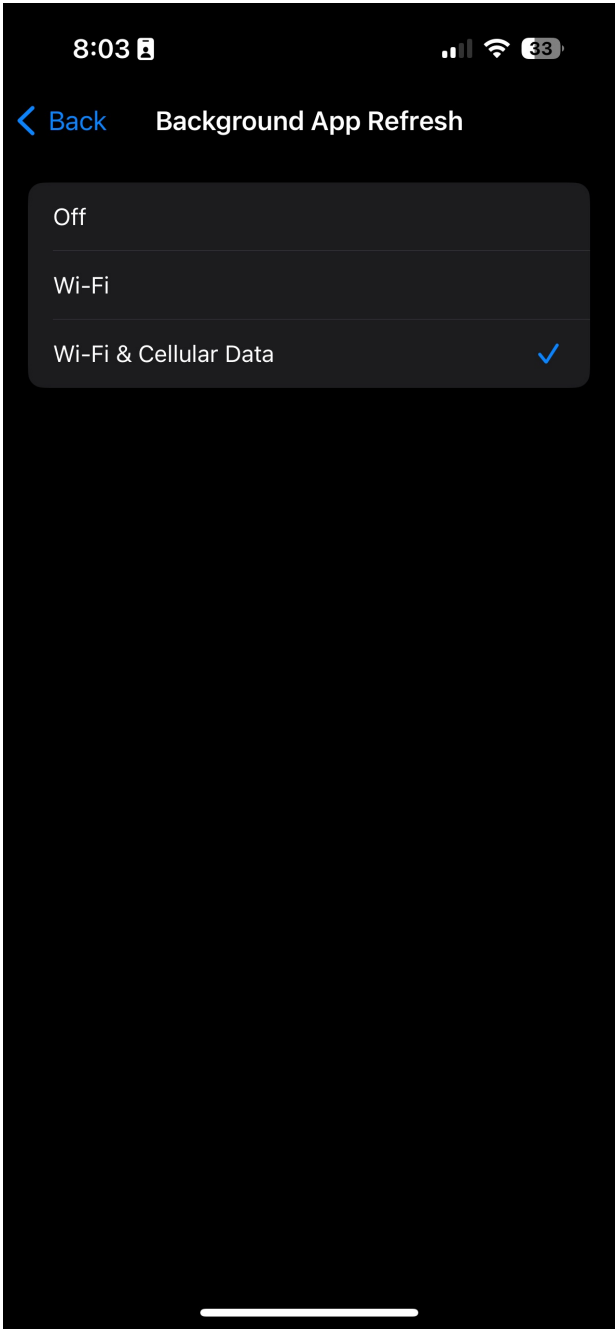
2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.


Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>;</p> <p>https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/extending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/backgroundtasks/; https://developer.apple.com/documentation/watchkit/background_execution/using_background_tasks/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/prepar-</p>


Claim	Public Documentation
	<p> ing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks/bgapprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocesstask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/devicemanagement/mail; https://developer.apple.com/documentation/security/secure_transport/using_the_secure_socket_layer_for_network_communication/; https://developer.apple.com/documentation/networkextension/personal_vpn; https://developer.apple.com/documentation/foundation/nsproxy; https://developer.apple.com/documentation/messages/; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback/; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063/; </p>





Claim	Public Documentation
	<div><h2>Factors affecting your runtime</h2><div>Critically low batteryBackground App Refresh switchAirplane modeLow Power ModeOngoing iCloud restoreSettingsDisplay on/off stateDevice temperatureSystem budgetsProcess contentionApp usageApp switcherRate limitingCamera in-useDevice lock state</div></div>

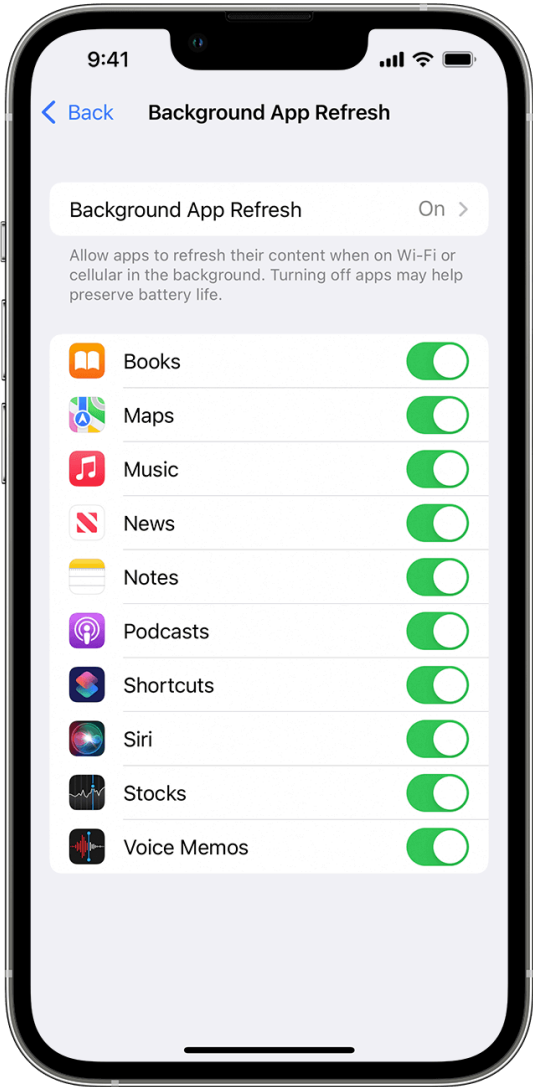
Claim	Public Documentation
	<div data-bbox="585 237 1822 933"><h3>Top factors</h3><ul style="list-style-type: none"> Critically low battery Low Power Mode App usage App switcher Background App Refresh switch System budgets Rate limiting</div> <p data-bbox="585 938 1106 971">; see also exemplary screen shots below:</p>



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	 Three Apple Watch screens are shown side-by-side. The first screen displays the 'Settings' app with options for General, Do Not Disturb, and Airplane Mode. The second screen displays the 'General' settings with options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen displays the 'Background App Refresh' settings, showing a toggle switch turned off and explanatory text about battery life and app refresh behavior.
[1i] classify whether a particular application capable of both interacting with the user in a user interface foreground of the device, and at least some Internet service activities when not interacting with the user in the device user interface foreground,	<p>The Accused Instrumentalities “classify whether a particular application capable of both interacting with the user in a user interface foreground of the device, and at least some Internet service activities when not interacting with the user in the device user interface foreground.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, sold and used by Verizon classify applications and internet service activities in both foreground and background. <i>See, e.g.</i>, https://www.verizon.com/support/data-usage-faqs/:</p>

Claim	Public Documentation
	<p data-bbox="625 342 1312 383">What is indirect or background data usage? </p> <p data-bbox="625 440 1877 509">Indirect data usage occurs in the background, during tasks performed automatically by your device. Some examples of indirect data usage are:</p> <ul data-bbox="617 548 1197 808" style="list-style-type: none"><li data-bbox="617 548 1197 586">• Automatic backups of pictures or videos<li data-bbox="617 623 917 660">• Software updates<li data-bbox="617 698 974 735">• App content refreshes<li data-bbox="617 773 1066 808">• Syncing and location services <p data-bbox="625 846 1383 883">Note: You can adjust these functions in your device Settings.</p> <p data-bbox="585 937 1371 972">; https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div><div><div><div><div>Personal</div><div>Business</div></div><div>Stores</div><div>Español</div></div><div><div><div></div><div>Shop</div><div>Why Verizon</div><div>Support</div></div><div><div>Sign in</div><div></div><div>Search </div></div></div><div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div></div><div><div>Support > Apple > Apple iPhone 7 Plus</div><div><h2>Apple iPhone - Turn Background App Refresh On / Off</h2><div><div>NOTE<p>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</p></div></div><div><div>1. From a Home screen on your Settings  > General. → If an app isn't available on your Home screen, swipe left to access the App Library.</div><div>2. Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">OffWi-FiWi-Fi and Cellular Data</div></div><div>https://support.apple.com/en-us/HT202070:</div></div></div></div>

Claim	Public Documentation
	<div><div><div><h2>Use Background App Refresh</h2><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p><p>https://support.apple.com/en-us/HT205234:</p></div><div></div></div></div>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

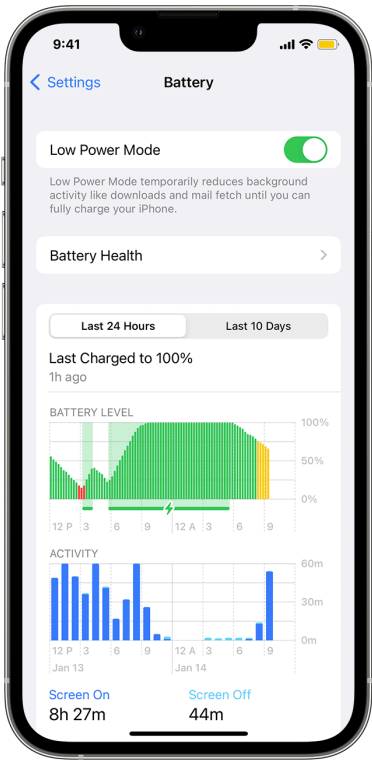
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

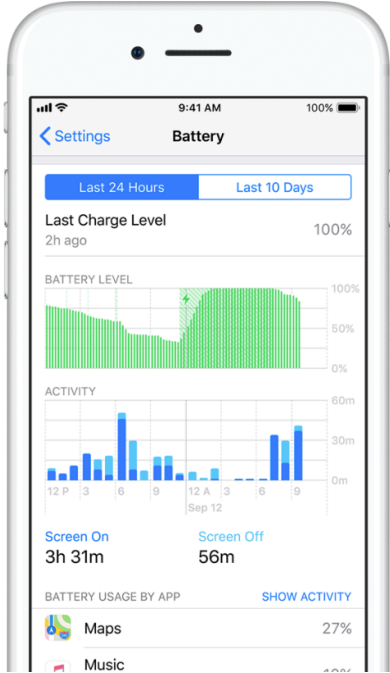
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.



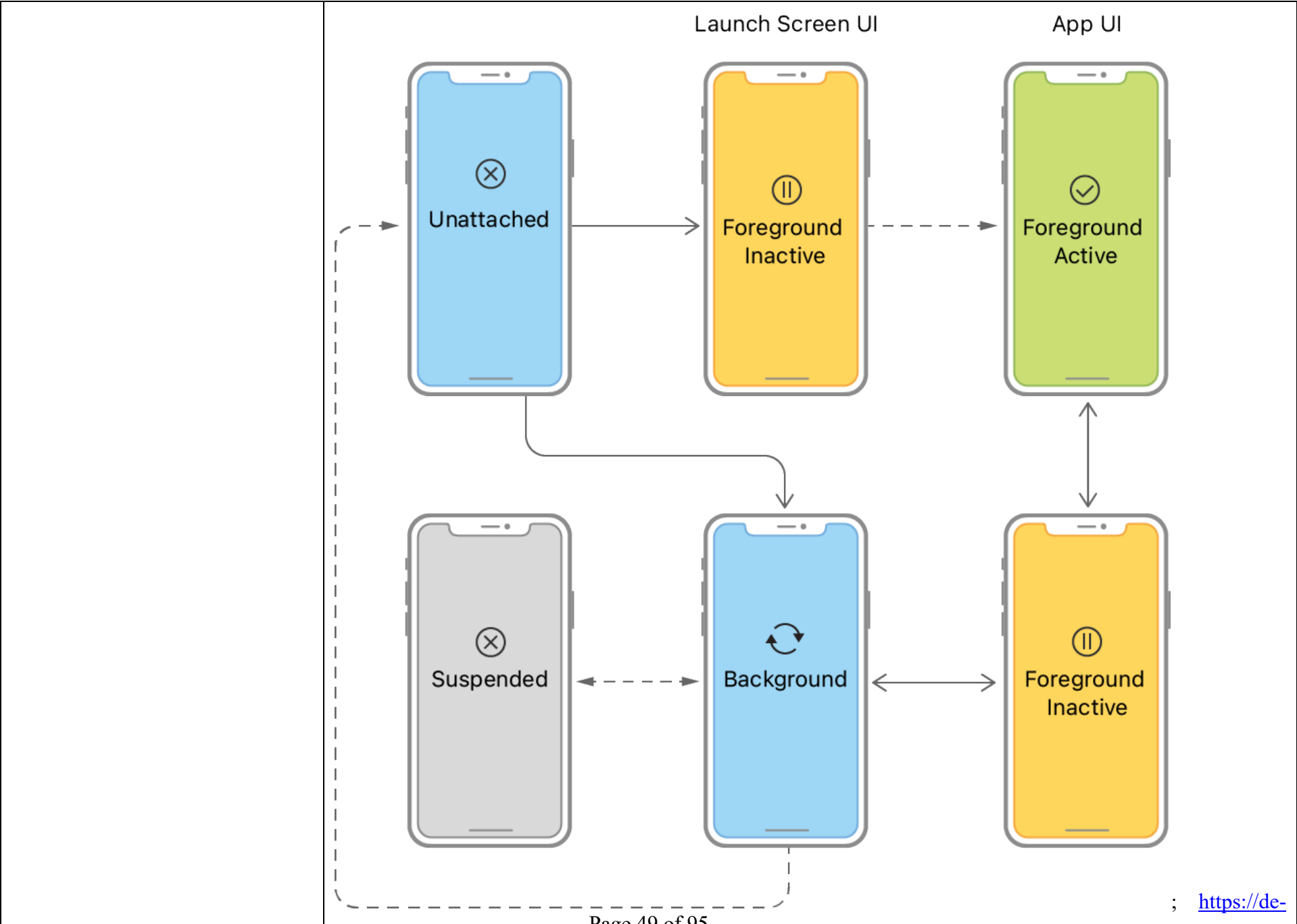
1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).

2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.

Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate:</p>

Claim	Public Documentation
	<div>Instance Property</div> <div>applicationState</div> <div>The app's current state, or that of its most active scene.</div> <div><div>iOS 4.0+</div><div>iPadOS 4.0+</div><div>Mac Catalyst 13.1+</div><div>tvOS 9.0+</div><div>visionOS 1.0+ Beta</div></div> <div><pre>var applicationState: UIApplication.State { get }</pre></div> <div>Discussion</div> <div>The behavior of this property depends on whether your app is scene-based.</div> <div>In a scene-based app, this property takes the value of the most active scene, which it determines from each scene's <code>activationState</code> property. A scene-based app launches in the background state, and transitions between its states as scenes connect, change their states, and disconnect. For scene-based apps, use <code>UISceneDelegate</code> to respond to changes in an individual scene's life cycle.</div> <div>In a sceneless app, the property's value is always the app's current state. The app is inactive at launch, and then is generally in either an active or background state. The app may become inactive for a short period — for example, when transitioning between active and background states, when the system presents an alert in front of it, or when the system displays the application switcher. For sceneless apps, use <code>UIApplicationDelegate</code> to respond to the app's life cycle changes.</div> <div>; https://developer.apple.com/documentation/uikit/app_and_environment/managing_your_app_s_life_cycle:</div>

Claim	Public Documentation
	<div data-bbox="588 240 1822 610"><h1 data-bbox="588 256 1705 334">Managing Your App's Life Cycle</h1><p data-bbox="588 370 1730 522">Respond to system notifications when your app is in the foreground or background, and handle other significant system-related events.</p></div> <div data-bbox="588 695 869 756"><h2 data-bbox="588 695 869 756">Overview</h2></div> <div data-bbox="588 795 1768 1081"><p data-bbox="588 795 1768 1081">The current state of your app determines what it can and cannot do at any time. For example, a foreground app has the user's attention, so it has priority over system resources, including the CPU. By contrast, a background app must do as little work as possible, and preferably nothing, because it is offscreen. As your app changes from state to state, you must adjust its behavior accordingly.</p></div>




Claim	Public Documentation
	<p>veloper.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_foreground/:</p> <div><h2>Preparing Your UI to Run in the Foreground</h2><p>Configure your app to appear onscreen.</p></div> <p>Overview</p> <p>Use foreground transitions to prepare your app's UI to appear onscreen. An app's transition to the foreground is usually in response to a user action. For example, when the user taps the app's icon, the system launches the app and brings it to the foreground. Use a foreground transition to update your app's UI, acquire resources, and start the services you need to handle user requests.</p>


Claim	Public Documentation
	<p data-bbox="598 250 1577 289">Configure Your User Interface and Initial Tasks at Activation</p> <p data-bbox="598 313 1797 370">The system moves your app to the active state immediately before displaying the app’s UI. Activation is a good time to configure your app’s UI and runtime behavior; specifically:</p> <ul data-bbox="619 394 1325 732" style="list-style-type: none"><li data-bbox="619 394 1016 418">• Show your app’s windows, if needed.<li data-bbox="619 448 1192 472">• Change the currently visible view controller, if needed.<li data-bbox="619 501 1205 526">• Update the data values and state of views and controls.<li data-bbox="619 555 1079 579">• Display controls to resume a paused game.<li data-bbox="619 609 1325 633">• Start or resume any dispatch queues that you use to execute tasks.<li data-bbox="619 662 930 686">• Update data source objects.<li data-bbox="619 716 951 740">• Start timers for periodic tasks. <p data-bbox="598 756 1211 781">Put your configuration code in one of the following methods:</p> <ul data-bbox="619 805 1772 883" style="list-style-type: none"><li data-bbox="619 805 1772 829">• For a scene-based UI—The <code>sceneDidBecomeActive(_:)</code> method of the appropriate scene delegate object.<li data-bbox="619 859 1682 883">• For all other apps—The <code>applicationDidBecomeActive(_:)</code> method of your app delegate object. <p data-bbox="598 911 1797 1032">Activation is also the time to put finishing touches on your UI before displaying it to the user. Don’t run any code that might block your activation method. Instead, make sure you have everything you need in advance. For example, if your data changes frequently outside of the app, use background tasks to fetch updates from the network before your app returns to the foreground. Otherwise, be prepared to display existing data while you fetch changes asynchronously.</p> <p data-bbox="588 1024 1990 1390">https://de- veloper.apple.com/documentation/uikit/windows_and_screens/scenes/prepar- ing_your_ui_to_run_in_the_background/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/prepar- ing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.ap- ple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/ex tending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/back- groundtasks/; https://developer.apple.com/documentation/watchkit/background_execution/using_back- ground_tasks/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/prepar-</p>


Claim	Public Documentation
	<p> ing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks/bgappprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocessingtask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_foreground/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063/; </p>


Claim	Public Documentation
	<div><h2>Factors affecting your runtime</h2><div>Critically low batteryBackground App Refresh switchAirplane modeLow Power ModeOngoing iCloud restoreSettingsDisplay on/off stateDevice temperatureSystem budgetsProcess contentionApp usageApp switcherRate limitingCamera in-useDevice lock state</div><div><div></div><div>02:2817:06</div></div></div>


Top factors


 Critically low battery


 Low Power Mode


 App usage


 App switcher


 Background App Refresh switch





 System budgets

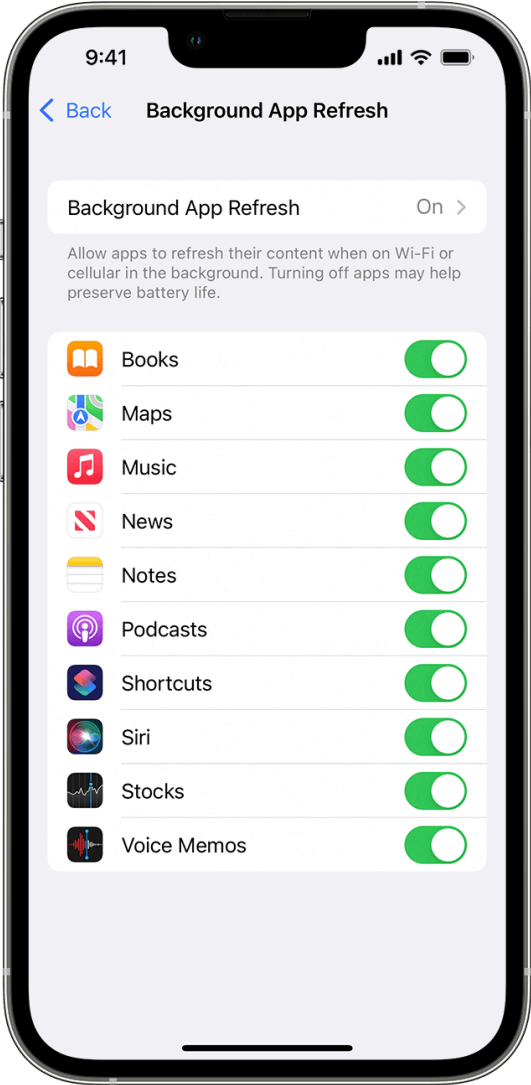
 Rate limiting



Claim	Public Documentation
	 Three Apple Watch screens are shown side-by-side. The first screen displays the 'Settings' app with options for General, Do Not Disturb, and Airplane Mode. The second screen displays the 'General' settings page with options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen displays the 'Background App Refresh' settings page, showing a toggle switch for 'Background App Refresh' which is currently turned off. Below the toggle, text explains that turning off this feature may preserve battery life and that apps with complications will continue to refresh even when background app refresh is off.
<p>[1j] is interacting with the user in the device user interface foreground, and</p>	<p>The Accused Instrumentalities comprise one or more applications “interacting with the user in the device user interface foreground.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, sold and used by Verizon classify applications and internet service activities in both foreground and background. <i>See, e.g.,</i> https://www.verizon.com/support/data-usage-faqs/:</p>

Claim	Public Documentation
	<p data-bbox="625 342 1310 383">What is indirect or background data usage? </p> <p data-bbox="625 440 1875 509">Indirect data usage occurs in the background, during tasks performed automatically by your device. Some examples of indirect data usage are:</p> <ul data-bbox="617 548 1197 808" style="list-style-type: none"><li data-bbox="617 548 1197 586">• Automatic backups of pictures or videos<li data-bbox="617 621 915 659">• Software updates<li data-bbox="617 695 972 732">• App content refreshes<li data-bbox="617 768 1066 805">• Syncing and location services <p data-bbox="625 844 1383 881">Note: You can adjust these functions in your device Settings.</p> <p data-bbox="585 935 1371 972">; https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div></div><div>ShopWhy VerizonSupport</div><div>Sign inSearch</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div>Support > Apple > Apple iPhone 7 Plus</div><div><h2>Apple iPhone - Turn Background App Refresh On / Off</h2></div><div><div>NOTE<p>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</p></div></div><div><div><div>1.</div><div>From a Home screen on your Settings  General. → If an app isn't available on your Home screen, swipe left to access the App Library.</div></div><div><div>2.</div><div>Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">OffWi-FiWi-Fi and Cellular Data</div></div></div><div>https://support.apple.com/en-us/HT202070:</div></div>

Claim	Public Documentation
	<div><div><div><h2>Use Background App Refresh</h2><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p><p>https://support.apple.com/en-us/HT205234:</p></div></div><div></div></div>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

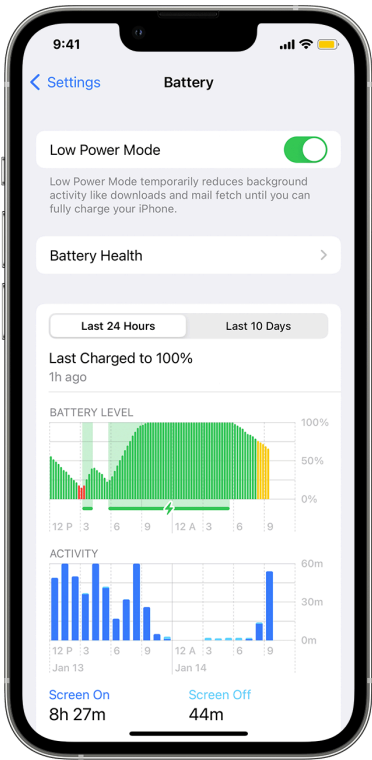
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

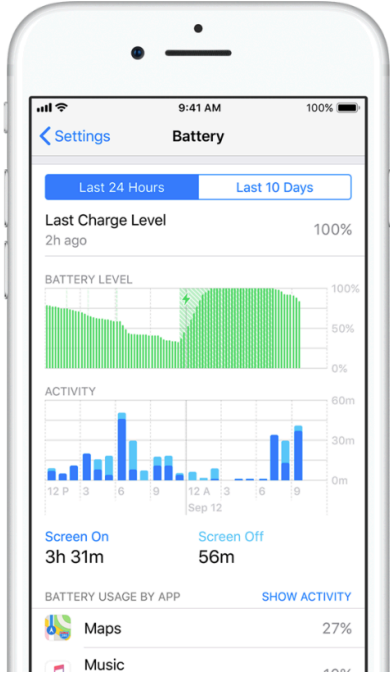
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.



1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).

2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.


Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate:</p>


Claim	Public Documentation
	<div>Instance Property</div> <div>applicationState</div> <div>The app's current state, or that of its most active scene.</div> <div><div>iOS 4.0+</div><div>iPadOS 4.0+</div><div>Mac Catalyst 13.1+</div><div>tvOS 9.0+</div><div>visionOS 1.0+ Beta</div></div> <div><pre>var applicationState: UIApplication.State { get }</pre></div> <div>Discussion</div> <div>The behavior of this property depends on whether your app is scene-based.</div> <div>In a scene-based app, this property takes the value of the most active scene, which it determines from each scene's <code>activationState</code> property. A scene-based app launches in the background state, and transitions between its states as scenes connect, change their states, and disconnect. For scene-based apps, use <code>UISceneDelegate</code> to respond to changes in an individual scene's life cycle.</div> <div>In a sceneless app, the property's value is always the app's current state. The app is inactive at launch, and then is generally in either an active or background state. The app may become inactive for a short period — for example, when transitioning between active and background states, when the system presents an alert in front of it, or when the system displays the application switcher. For sceneless apps, use <code>UIApplicationDelegate</code> to respond to the app's life cycle changes.</div> <div><pre>;</pre><div>https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/preparing_your_ui_to_run_in_the_background/extending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/backgroundtasks/;</div></div>


Claim	Public Documentation
	<p> https://developer.apple.com/documentation/watchkit/background_execution/using_background_tasks/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks https://developer.apple.com/documentation/backgroundtasks/bgapprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocessingtask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_foreground/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063; </p>


Claim	Public Documentation
	<div data-bbox="585 237 1822 935"><h3>Factors affecting your runtime</h3><div><div>Critically low battery</div><div>Background App Refresh switch</div><div>Airplane mode</div><div>Low Power Mode</div><div>Ongoing iCloud restore</div><div>Settings</div><div>Display on/off state</div><div>Device temperature</div><div>System budgets</div><div>Process contention</div><div>App usage</div><div>App switcher</div><div>Rate limiting</div><div>Camera in-use</div><div>Device lock state</div></div><div data-bbox="1089 886 1316 922"><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div>02:10</div><div>17:08</div></div></div></div>


Top factors


 Critically low battery


 Low Power Mode


 App usage

 App switcher


 Background App Refresh switch





 System budgets

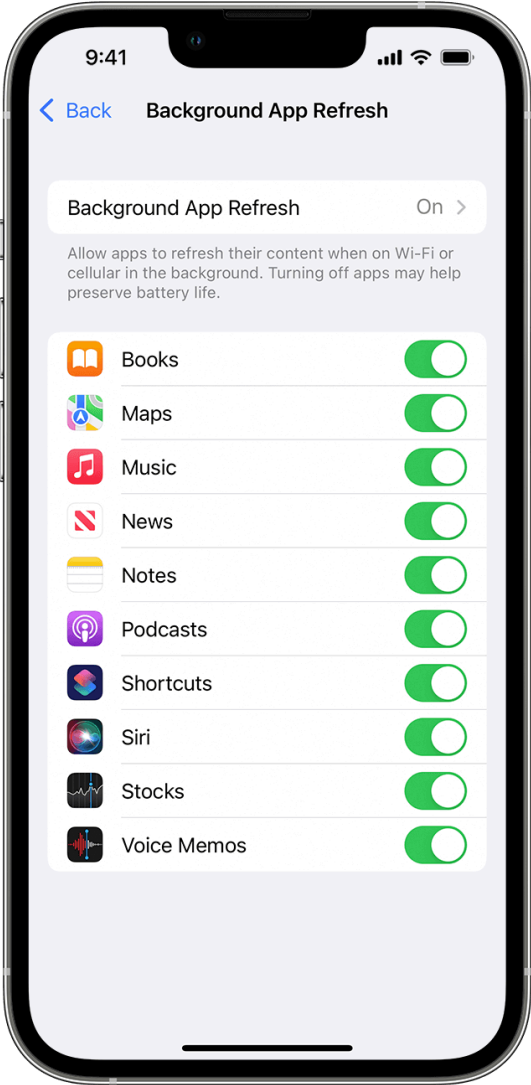
 Rate limiting



Page 64 of 95

Claim	Public Documentation
	 <p>The image displays three Apple Watch screens side-by-side. The first screen shows the 'Settings' menu with options for General, Do Not Disturb, and Airplane Mode. The second screen shows the 'General' settings menu with options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen shows the 'Background App Refresh' settings menu, where the toggle is turned off, and a message explains that turning it off may preserve battery life and that apps with complications will continue to refresh even when the setting is off.</p>
<p>[1k] selectively allow or deny one or more Internet service activities by or on behalf of the particular application based on whether or not the particular application is one of the first one or more applications, the differential traffic control policy, including any applicable user augmentation of the differential traffic control policy, and the classifications performed by the one or more processors.</p>	<p>The Accused Instrumentalities “selectively allow or deny one or more Internet service activities by or on behalf of the particular application based on whether or not the particular application is one of the first one or more applications, the differential traffic control policy, including any applicable user augmentation of the differential traffic control policy, and the classifications performed by the one or more processors.”</p> <p>For example, Apple’s devices, including the iPhone 15 Pro, sold and used by Verizon allow or deny internet service activities by or on behalf of applications based on classifications of particular applications and policies.. See, e.g., https://www.verizon.com/support/knowledge-base-207174/:</p>

Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div></div><div>ShopWhy VerizonSupport</div><div>Sign inSearch</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div><div>Support > Apple > Apple iPhone 7 Plus</div><div><h2>Apple iPhone - Turn Background App Refresh On / Off</h2><div><div>NOTE</div><div>When Background App Refresh is turned on, apps that take advantage of this feature can refresh themselves in the background. For additional info, refer to multitasking and background app refresh.</div></div><div><div>1. From a Home screen on your Settings  General. → If an app isn't available on your Home screen, swipe left to access the App Library.</div><div>2. Tap Background App Refresh twice then tap one of the following: → When low power mode is on, the background app refresh is disabled.<ul style="list-style-type: none">OffWi-FiWi-Fi and Cellular Data</div></div><div>https://support.apple.com/en-us/HT202070:</div></div></div></div>

Claim	Public Documentation
	<div><div><div><h2>Use Background App Refresh</h2><p>After you switch to a different app, some apps run for a short period of time before they're set to a suspended state. Apps that are in a suspended state aren't actively in use, open, or taking up system resources. With Background App Refresh, suspended apps can check for updates and new content.</p><p>If you want suspended apps to check for new content, go to Settings > General > Background App Refresh and turn on Background App Refresh. If you quit an app from the app switcher, it might not be able to run or check for new content before you open it again.</p><p>https://support.apple.com/en-us/HT205234:</p></div><div></div></div></div>

Use Low Power Mode to save battery life on your iPhone or iPad


Low Power Mode reduces the amount of power that your iPhone or iPad uses when the battery gets low.

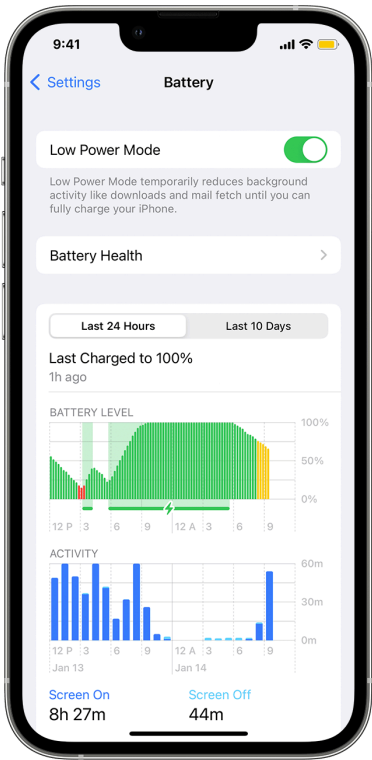
To turn Low Power Mode on or off, go to Settings > Battery. You can also turn Low Power Mode on and off from Control Center. Go to Settings > Control Center > Customize Controls, then select Low Power Mode to add it to Control Center.

When Low Power Mode is on, your iPhone or iPad will last longer before you need to charge it, but some features might take longer to update or complete. Also, some tasks might not work until you turn off Low Power Mode, or until you charge your iPhone or iPad to 80% or higher.

Low Power Mode reduces or affects these features:

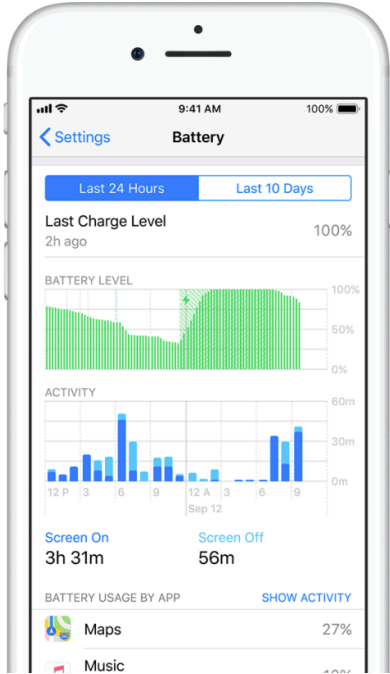
- 5G (except for video streaming) on iPhone 12 and iPhone 13 models¹
- Auto-Lock (defaults to 30 seconds)
- Display brightness
- Display refresh rate (limited up to 60 Hz) on iPhone and iPad models with ProMotion display²
- Some visual effects
- iCloud Photos (temporarily paused)
- Automatic downloads
- Email fetch
- Background app refresh

When Low Power Mode is on, the battery in the status bar will be yellow. You'll see a yellow battery icon  and the battery percentage. After you charge your iPhone or iPad to 80% or higher, Low Power Mode automatically turns off.












1. If you turn on Low Power Mode, 5G is disabled, except in some cases like video streaming and large downloads on iPhone 12 and iPhone 13 models. With iPhone 12 models, Low Power Mode disables 5G standalone (where available).


2. These devices have ProMotion display: iPhone 13 Pro and later, iPhone 13 Pro Max and later, iPad Pro 10.5-inch, all iPad Pro 11-inch models, and iPad Pro 12.9-inch (2nd generation) and later.

Claim	Public Documentation
	<p>https://www.apple.com/batteries/maximizing-performance/:</p> <h2>View Battery Usage information</h2> <p>With iOS, you can easily manage your device's battery life, because you can see the proportion of your battery used by each app (unless the device is charging). To view your usage, go to Settings > Battery.</p> <p>Here are the messages you may see listed below the apps you've been using:</p> <p>Background Activity. This indicates that the battery was used by the app while it was in the background — that is, while you were using another app.</p> <ul style="list-style-type: none">• To improve battery life, you can turn off the feature that allows apps to refresh in the background. Go to Settings > General > Background App Refresh and select Wi-Fi, Wi-Fi & Cellular Data, or Off to turn off Background App Refresh entirely.• If the Mail app lists Background Activity, you can choose to fetch data manually or increase the fetch interval. Go to Settings > Accounts & Passwords > Fetch New Data.  <p>; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_back-ground/; https://developer.apple.com/documentation/uikit/app_and_environment/scenes/prepar-ing_your_ui_to_run_in_the_background/about_the_background_execution_sequence/; https://developer.ap-ple.com/documentation/uikit/app_and_environment/scenes/preparing_your ui_to_run_in_the_background/ex-tending_your_app_s_background_execution_time/; https://developer.apple.com/documentation/back-groundtasks/; https://developer.apple.com/documentation/watchkit/background_execution/using_back-ground_tasks/;</p>

Claim	Public Documentation
	<p>https://developer.apple.com/documentation/uikit/windows_and_screens/scenes/preparing_your_ui_to_run_in_the_background/using_background_tasks_to_update_your_app/; https://developer.apple.com/documentation/backgroundtasks/refreshing_and_maintaining_your_app_using_background_tasks/; https://developer.apple.com/documentation/backgroundtasks https://developer.apple.com/documentation/backgroundtasks/bgapprefreshtask; https://developer.apple.com/documentation/backgroundtasks/bgprocessingtask; https://developer.apple.com/documentation/backgroundtasks/bgtask; https://developer.apple.com/documentation/uikit/uiapplication/1622976-backgroundfetchintervalminimum/; https://developer.apple.com/documentation/uikit/uiapplication/1622994-backgroundrefreshstatus/; https://developer.apple.com/documentation/uikit/uiapplication/1623003-applicationstate; https://developer.apple.com/documentation/uikit/uiapplication/state; https://developer.apple.com/documentation/foundation/url_loading_system; https://developer.apple.com/documentation/foundation/urlsession; https://developer.apple.com/documentation/avfoundation/avplayer; https://developer.apple.com/documentation/avfoundation/media_playback/configuring_your_app_for_media_playback; https://developer.apple.com/videos/play/wwdc2019/707/; https://developer.apple.com/videos/play/wwdc2020/10063/;</p>

Claim	Public Documentation
	<div><h2>Factors affecting your runtime</h2><div><div>Critically low battery</div><div>Background App Refresh switch</div><div>Airplane mode</div><div>Low Power Mode</div><div>Ongoing iCloud restore</div><div>Settings</div><div>Display on/off state</div><div>Device temperature</div><div>System budgets</div><div>Process contention</div><div>App usage</div><div>App switcher</div><div>Rate limiting</div><div>Camera in-use</div><div>Device lock state</div></div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div>02:28</div><div>17:08</div></div></div>

Claim	Public Documentation
	<div data-bbox="585 237 1822 935"><h3 data-bbox="653 272 877 318">Top factors</h3><div data-bbox="682 435 1249 863"><div data-bbox="682 435 1092 467"> Critically low battery</div><div data-bbox="682 500 1050 532"> Low Power Mode</div><div data-bbox="682 565 961 604"> App usage</div><div data-bbox="682 636 995 669"> App switcher</div><div data-bbox="682 701 1249 734"> Background App Refresh switch</div><div data-bbox="682 766 1037 799"> System budgets</div><div data-bbox="682 831 982 863"> Rate limiting</div></div><div data-bbox="1619 649 1782 896"></div><div data-bbox="1092 886 1316 922"></div></div>

Claim	Public Documentation
	 <p>Three Apple Watch screens are displayed side-by-side. The first screen shows the 'Settings' app with options for General, Do Not Disturb, and Airplane Mode. The second screen shows the 'General' settings page with options for Software Update, Orientation, Background App Refresh, and Wake Screen. The third screen shows the 'Background App Refresh' settings page with a toggle switch turned off and explanatory text about battery life and app refresh behavior.</p> <p>; see also, e.g., https://www.verizon.com/plans/; https://www.verizon.com/business/products/plans/; https://www.verizon.com/business/products/security/mobile-device-endpoint-security/mobile-device-management/mdm-device-enrollment-programs/; https://www.verizon.com/solutions-and-services/add-ons/safety/verizon-smart-family/; https://www.verizon.com/support/knowledge-base-206963/; https://www.verizon.com/support/knowledge-base-152696/; https://www.verizon.com/support/verizon-smart-family-faqs/.</p>
<p>2. The wireless end-user device of claim 1, wherein based on the differential traffic control policy the one or more processors selectively deny one or more Internet service activities by or on behalf of the particular application when the particular application is one of the</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein based on the differential traffic control policy the one or more processors selectively deny one or more Internet service activities by or on behalf of the particular application when the particular application is one of the first one or more applications, the classified wireless network is a WWAN type, and the particular application is classified as not interacting with the user in the device user interface foreground.”</p> <p>See, for example, the disclosures identified for claim 1.</p>

Claim	Public Documentation
<p>first one or more applications, the classified wireless network is a WWAN type, and the particular application is classified as not interacting with the user in the device user interface foreground.</p>	
<p>3. The wireless end-user device of claim 2, wherein the one or more processors are further configured to override the selective denial of one or more Internet service activities by or on behalf of the particular application when the user has augmented the differential traffic control policy so as to indicate that Internet service activities are allowable when the classified wireless network is the WWAN type, and the particular application is classified as not interacting with the user in the device user interface foreground.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 2, wherein the one or more processors are further configured to override the selective denial of one or more Internet service activities by or on behalf of the particular application when the user has augmented the differential traffic control policy so as to indicate that Internet service activities are allowable when the classified wireless network is the WWAN type, and the particular application is classified as not interacting with the user in the device user interface foreground.”</p> <p><i>See, for example, the disclosures identified for claims 1-2.</i></p>
<p>4. The wireless end-user device of claim 2, wherein based on the differential traffic control policy the one or more processors selectively allow one or more Internet service activities by or on behalf of the particular application when the particular application is one of the first one or more applications, the</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 2, wherein based on the differential traffic control policy the one or more processors selectively allow one or more Internet service activities by or on behalf of the particular application when the particular application is one of the first one or more applications, the classified wireless network is the WWAN type, and the particular application is classified as interacting with the user in the device user interface foreground.”</p> <p><i>See, for example, the disclosures identified for claims 1-2.</i></p>


Claim	Public Documentation
classified wireless network is the WWAN type, and the particular application is classified as interacting with the user in the device user interface foreground.	
5. The wireless end-user device of claim 1, wherein based on the differential traffic control policy the one or more processors selectively allow one or more Internet service activities by or on behalf of a second particular application and/or service when the second particular application and/or service is one of the second one or more applications and/or services and the classified wireless network is the WWAN type.	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein based on the differential traffic control policy the one or more processors selectively allow one or more Internet service activities by or on behalf of a second particular application and/or service when the second particular application and/or service is one of the second one or more applications and/or services and the classified wireless network is the WWAN type.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
6. The wireless end-user device of claim 1, wherein the one or more processors are configured to classify that the particular application is interacting with the user in the device user interface foreground when the user of the device is directly interacting with that application or perceiving any benefit from that application.	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are configured to classify that the particular application is interacting with the user in the device user interface foreground when the user of the device is directly interacting with that application or perceiving any benefit from that application.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>

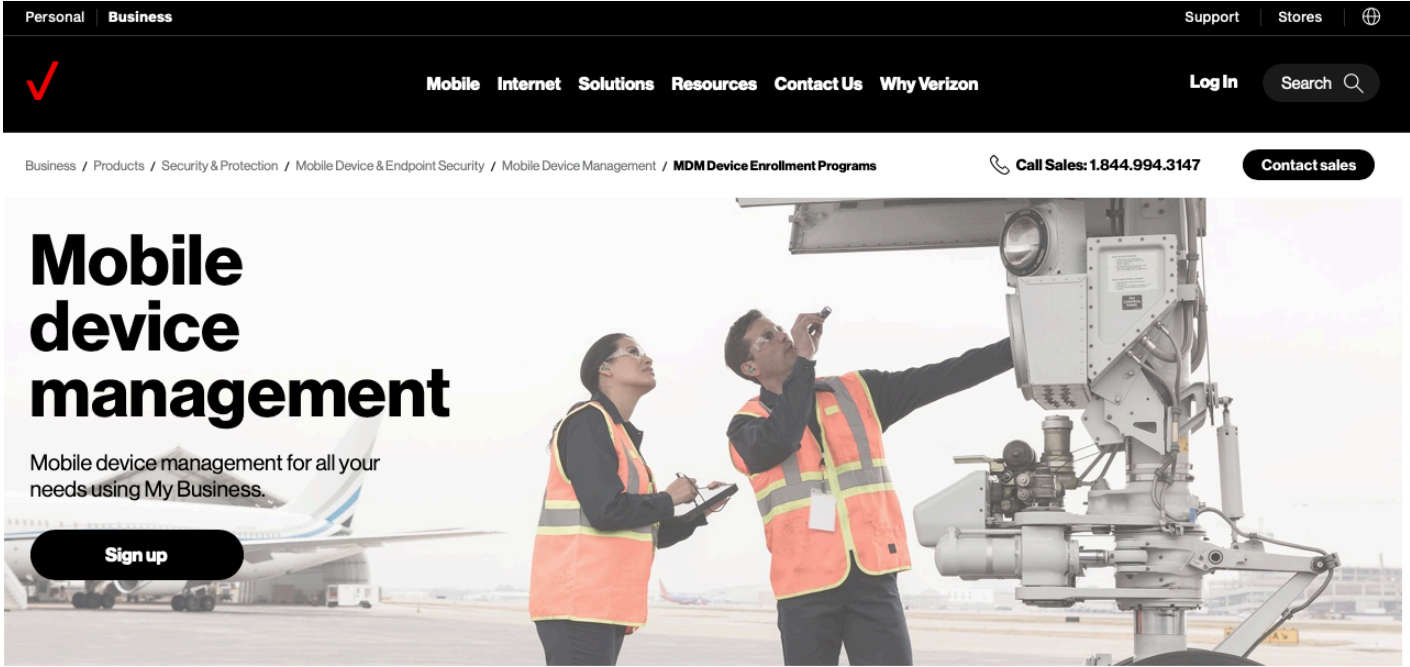
Claim	Public Documentation
<p>7. The wireless end-user device of claim 1, wherein the user interface is further to provide the user of the device with information regarding why the differential traffic control policy is applied to the particular application.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the user interface is further to provide the user of the device with information regarding why the differential traffic control policy is applied to the particular application.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>8. The wireless end-user device of claim 1, wherein the differential traffic control policy is part of a multimode profile having different policies for different ones of the network types.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the differential traffic control policy is part of a multimode profile having different policies for different ones of the network types.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>9. The wireless end-user device of claim 8, wherein the one or more processors are further configured to select a traffic control policy from the multimode profile based at least in part on the classified wireless network type.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 8, wherein the one or more processors are further configured to select a traffic control policy from the multimode profile based at least in part on the classified wireless network type.”</p> <p><i>See, for example, the disclosures identified for claims 1 and 8.</i></p>
<p>10. The wireless end-user device of claim 9, wherein the one or more processors are further configured to, when the classified wireless network type is at least one type of WLAN, select the traffic control policy from the multimode profile based at least in part on a type of network connection from the WLAN to the Internet.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 9, wherein the one or more processors are further configured to, when the classified wireless network type is at least one type of WLAN, select the traffic control policy from the multimode profile based at least in part on a type of network connection from the WLAN to the Internet.”</p> <p><i>See, for example, the disclosures identified for claim 1 and 9.</i></p>


Claim	Public Documentation
11. The wireless end-user device of claim 1, wherein the plurality of network types include three or more of 2G, 3G, 4G, home, roaming, and WiFi.	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the plurality of network types include three or more of 2G, 3G, 4G, home, roaming, and WiFi.”</p> <p><i>See</i>, for example, the disclosures identified for claim 1.</p>
12. The wireless end-user device of claim 1, the one or more processors further configured to receive an update to at least a portion of the differential traffic control policy list from a network element.	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, the one or more processors further configured to receive an update to at least a portion of the differential traffic control policy list from a network element.”</p> <p><i>See</i>, for example, the disclosures identified for claim 1.</p> <p>As yet another example, the one or more processors are configured to receive portions of policies from a network element. <i>See, e.g.</i>, https://www.verizon.com/plans/:</p>







Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>StoresEspañol</div></div><div><div><div>✓</div><div>ShopWhy VerizonSupport</div><div>Sign in</div><div>Search</div></div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div><div>Pick your perfect plan.</div><div>Experience ultra-fast mobile and home internet plans. Plus, get special discounts to save you more.</div></div><div><div>Mobile plans</div><div>Get our best plans ever, with unlimited data on all your devices.</div><div><div><div>Unlimited</div><div>Get the power of 5G Ultra Wideband with unlimited data and 10x faster speeds.¹</div><div>→</div></div><div><div>Prepaid</div><div>Pay before you talk, text and stream. Now including Unlimited and 5G.</div><div>→</div></div><div><div>Connected devices</div><div>Get unlimited monthly data for devices such as mobile hotspots, tablets, laptops, smartwatches and more.</div><div>→</div></div><div><div>International</div><div>Whether you're traveling the world or at home in the US, Verizon helps you stay connected.</div><div>→</div></div></div><div><div>; https://www.verizon.com/business/products/plans/:</div></div></div></div>

Claim	Public Documentation
	<div><div><div><div>PersonalBusiness</div><div>SupportStores</div></div><div><div><div>✓</div><div>MobileInternetSolutionsResourcesContact UsWhy Verizon</div><div>Log InSearch</div></div></div></div><div><div>Business / Products / Plans</div><div>Call Sales: 1.888.789.1223Contact sales</div></div><div><div>Plans for your business</div><div>From mobile networks to internet connectivity and cybersecurity protection, we have plans to fit your business needs.</div></div><div><div>Mobile plansFios internet plansVoice plans</div></div><div><div><div>Business Unlimited Mobility Plans</div><div>Our Business Unlimited plans provide mobility built for getting work done, with the 5G, data and performance your business needs.</div><div><div>View details</div><div>Off</div></div><div><div><div>Business Unlimited Start 5G</div><div>Get the essentials</div><div>As low as \$30/line</div><div>Get started</div></div><div><div><div>Business Unlimited Plus 5G</div><div>Boost your productivity</div><div>As low as \$40/line</div><div>Get started</div></div><div><div><div>Business Unlimited Pro 5G</div><div>Get more of what you need</div><div>As low as \$45/line</div><div>Get started</div></div></div></div><div><div>; https://www.verizon.com/support/knowledge-base-212894/:</div></div></div></div></div></div>

Claim	Public Documentation
	<div data-bbox="604 272 953 297">Support > Apple > Apple iPhone 15</div> <div data-bbox="638 370 1661 513"><h1>Apple iPhone - Update Carrier Settings</h1></div> <div data-bbox="686 643 770 667"><p>NOTE</p></div> <div data-bbox="732 706 1898 1023"><ul style="list-style-type: none">Carrier settings updates are small files that are installed on iOS devices. The carrier settings include updates to Access Point Names (APNs), MMS settings, features like tethering and default apps. Having the most up to date carrier settings is recommended for the proper functionality of the device.Apple® Watch® Series 3 users must be on Carrier Bundle 29.1 or higher (check on your iPhone® via Settings > General > About > Carrier). For more info on how to check carrier and / or update your Carrier version, refer to Updating Your Carrier Settings</div> <div data-bbox="648 1157 1671 1395"><ol style="list-style-type: none">From a Home screen on your Settings  > General. → If unavailable, swipe left to access the App Library. → If a carrier settings update is available, you're presented with an option to update.Tap About. → If an update is available, an option appears to update. → To view the current carrier info, refer to View Carrier.</div>

Claim	Public Documentation
	<p>https://www.verizon.com/business/products/security/mobile-device-endpoint-security/mobile-device-management/mdm-device-enrollment-programs/:</p>  <p>https://www.verizon.com/solutions-and-services/add-ons/safety/verizon-smart-family:</p>

Claim	Public Documentation
	<div><div><div><div><div>Personal</div><div>Business</div><div>Looking for Business? X</div></div><div>Stores</div><div>Español</div></div><div><div>✓</div><div>Shop</div><div>Why Verizon</div><div>Support</div><div>Sign in</div><div>Search</div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div></div><div><div>Verizon Smart Family</div><div>OverviewFeaturesPricingSupport</div><div>Get it now</div></div><div><div><div>Peace of mind for you. Freedom for them.</div><div></div></div></div></div>

Claim	Public Documentation		
	 Block it Out Keep certain apps and sites blocked until your kid is ready.	 Trusted contacts only Make sure they're only texting and chatting with contacts you've approved. Learn more about setting Trusted Contacts by visiting: https://www.verizon.com/support/how-to-use-verizon-smart-family/ .	 Cut back screen time Turn off the web during school hours, bedtime or dinner time so they can focus on what matters most.
	 Know where they are Location tracking keeps tabs on your child's phone and sends alerts when they arrive at their destination.	 Pick me up Kids can request and share location with their parents.	 View their driving or passenger activity Keep your mind at ease whether your kids are on the bus, carpooling or driving.
	; https://www.verizon.com/support/knowledge-base-206963/ ; https://www.verizon.com/support/knowledge-base-152696/ ; https://www.verizon.com/support/verizon-smart-family-faqs/ ;		

What Verizon Smart Family features are available without downloading the Verizon Smart Family Companion app on my child's device?

Certain features are only available if the [Verizon Smart Family Companion app](#) is installed on your child's smartphone and paired with the Verizon Smart Family app on your device.

- **Without pairing, you can:**

- View call and text activity
- Set time restrictions on texts, calls and data usage*
- Set data limits*
- Set text, call and purchase limits
- Get access to the device's network location

Note: Network location accuracy may vary up to a few miles.

- **You must pair to:**

- Set content filters
- Monitor web and app activity
- Pause internet access
- Set time restrictions on Wi-Fi usage
- Locate family members and set location alerts with the best location accuracy
- Use the location check-in feature, where family members can send you their precise location when they arrive at their destination
- Use the **Pick Me Up** feature that lets your child send a request for a ride to a parent line

Claim	Public Documentation
	<p>; https://developer.android.com/about/versions/pie/android-9.0:</p> <p>Data cost sensitivity in JobScheduler</p> <p>Beginning in Android 9, <code>JobScheduler</code> can use network status signals provided by carriers to improve the handling of network-related jobs.</p> <p>Jobs can declare their estimated data size, signal prefetching, and specify detailed network requirements. <code>JobScheduler</code> then manages work according to the network status. For example, when the network signals that it is congested, <code>JobScheduler</code> might defer large network requests. When on an unmetered network, <code>JobScheduler</code> can run prefetch jobs to improve the user experience, such as by prefetching headlines.</p> <p>When adding jobs, make sure to use <code>setEstimatedNetworkBytes()</code>, <code>setPrefetch()</code>, and <code>setRequiredNetwork()</code> when appropriate to help <code>JobScheduler</code> handle the work properly. When your job executes, be sure to use the <code>Network</code> object returned by <code>JobParameters.getNetwork()</code>. Otherwise you'll implicitly use the device's default network which may not meet your requirements, causing unintended data usage.</p> <p>; https://developer.android.com/training/basics/network-ops/reading-network-state; https://developer.android.com/training/connectivity/network-access-optimization; https://developer.android.com/reference/android/net/NetworkCapabilities.</p>
<p>13. The wireless end-user device of claim 1, wherein the plurality of network types include a roaming WWAN type and a home WWAN type, and the one or more processors are to apply the differential traffic control policy to one of but not both of the roaming WWAN type and the home WWAN type.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the plurality of network types include a roaming WWAN type and a home WWAN type, and the one or more processors are to apply the differential traffic control policy to one of but not both of the roaming WWAN type and the home WWAN type.”</p> <p><i>See</i>, for example, the disclosures identified for claim 1.</p> <p>For further example, the policy can be based on roaming on a WWAN network. <i>See, e.g.</i>, https://www.verizon.com/plans/international/international-travel/</p>

Claim	Public Documentation
	<div><div><div><div><div>Personal</div><div>Business</div><div>Looking for Business? X</div></div><div>Stores</div><div>Español</div></div><div><div>✓</div><div>Shop</div><div>Why Verizon</div><div>Support</div><div>Sign In</div><div><div></div></div><div>Search</div><div></div></div><div>Have a phone you love? Get up to \$540 when you bring your phone. OR Get iPhone 14 Pro or iPhone 14 on us. Online only. With Unlimited Ultimate. Shop now Offer Details</div><div><div><div>Stay connected wherever you are.</div><div>Verizon keeps you connected with coverage in more than 220 countries and destinations.</div><div>Plan your trip</div></div><div><div><div><div>TravelPass</div><div>Bring your unlimited data, talk and text to 210+ countries & destinations.</div><div>></div></div><div><div><div>International Monthly Plan</div><div>Get unlimited data, texts and a bundle of minutes for longer trips.</div><div>></div></div><div><div><div>Mexico & Canada</div><div>Roaming in Mexico and Canada is included in all Unlimited Plans.</div><div>></div></div><div><div><div>Cruise and InFlight plans and rates</div><div>View our data plan and pay as you go rates for voice and text.</div><div>></div></div></div></div><div>https://www.verizon.com/support/international-travel-faqs/#ready-outside-us</div></div></div></div></div></div></div>

How do I get my device ready to use outside the US?




Before you travel internationally, make sure your device's roaming is turned on so your device can connect to cellular networks in your destination country.

To turn on roaming, start on your device's home screen:

Device	Steps
iPhone®	1. Tap Settings (the gear icon).
	2. Tap Cellular , then tap Cellular Data Options , then Roaming .
	3. Slide both the Voice Roaming and the Data Roaming selectors to Green (on).
	4. Slide the International CDMA selector to off.
Motorola	1. Go to your Apps and tap Settings (the gear icon).
	2. Tap Network & Internet , then Mobile Network , then Data Roaming .
	3. Slide the Data Roaming selector to the right until it turns green.
	4. "Allow data roaming?" appears. Choose OK .
	5. Tap Preferred network type , then tap Global .
Android™	1. Go to your Apps, tap Settings , then tap More .
	2. Tap Mobile Networks and then Data Roaming access .
	3. Tap Allow access for all trips and Set Network Mode to Global .

Claim	Public Documentation
<p>14. The wireless end-user device of claim 1, wherein the plurality of network types include the WWAN type and a WLAN type, and the one or more processors are to apply the differential traffic control policy to one of but not both of the WWAN type and the WLAN type.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the plurality of network types include the WWAN type and a WLAN type, and the one or more processors are to apply the differential traffic control policy to one of but not both of the WWAN type and the WLAN type.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>15. The wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the application of the differential traffic control policy based on a power state of the device.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the application of the differential traffic control policy based on a power state of the device.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>16. The wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the application of the differential traffic control policy based on a device usage state.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the application of the differential traffic control policy based on a device usage state.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>17. The wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the applica-</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are further configured to dynamically change the application of the differential traffic control policy based on power control state changes for one or more of the modems.”</p>

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tion of the differential traffic control policy based on power control state changes for one or more of the modems.	<p><i>See</i>, for example, the disclosures identified for claim 1.</p> <p>As a further example, the one or more processors change policies based on power control state changes of modems. <i>See, e.g.</i>, https://developer.android.com/training/connectivity/network-access-optimization.</p> <div><h3>Optimize network access </h3><p>Using the wireless radio to transfer data is potentially one of your app's most significant sources of battery drain. To minimize the battery drain associated with network activity, it's critical that you understand how your connectivity model will affect the underlying radio hardware.</p><p>This section introduces the wireless radio state machine and explains how your app's connectivity model interacts with it. It then offers several techniques which, when followed, will help minimize the effect of your app's data consumption on the battery.</p></div>

The radio state machine

The wireless radio on your user's device has built-in power-saving features that help minimize the amount of battery power it consumes. When fully active, the wireless radio consumes significant power, but when inactive or in standby, the radio consumes very little power.

One important factor to remember is that the radio cannot move from standby to fully active instantaneously. There is a latency period associated with "powering up" the radio. So the battery transitions from higher energy states to lower energy states slowly in order to conserve power when not in use while attempting to minimize the latency associated with "powering up" the radio.

The state machine for a typical 3G network radio consists of three energy states:

- **Full power:** Used when a connection is active, allowing the device to transfer data at its highest possible rate.
- **Low power:** An intermediate state that cuts battery power consumption by around 50%.
- **Standby:** The minimal power-consuming state during which no network connection is active.

While the low and standby states drain significantly less battery, they also introduce significant latency to network requests. Returning to full power from the low state takes around 1.5 seconds, and moving from standby to full power can take over 2 seconds.

To minimize latency, the state machine uses a delay to postpone the transition to lower energy states. Figure 1 uses AT&T's timings for a typical 3G radio.

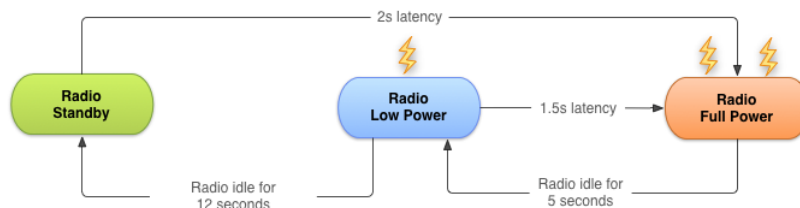


Figure 1. Typical 3G wireless radio state machine.

The radio state machine on each device, particularly the associated transition delay ("tail time") and startup latency, will vary based on the wireless radio technology employed (3G, LTE, 5G, and so on) and is defined and configured by the carrier network over which the device is operating.

This page describes a representative state machine for a typical 3G wireless radio, based on data provided by AT&T. However, the general principles and resulting best practices are applicable for all wireless radio implementations.

This approach is particularly effective for typical mobile web browsing as it prevents unwelcome latency while users browse the web. The relatively low tail-time also ensures that once a browsing session has finished, the radio can move to a lower energy state.

Unfortunately, this approach can lead to inefficient apps on modern smartphone operating systems like Android, where apps run both in the foreground (where latency is important) and in the background (where battery life should be prioritized).

How apps impact the radio state machine

Every time you create a new network connection, the radio transitions to the full power state. In the case of the typical 3G radio state machine described earlier, it will remain at full power for the duration of your transfer—plus an additional 5 seconds of tail time—followed by 12 seconds at the low energy state. So for a typical 3G device, every data transfer session will cause the radio to draw energy for at least 18 seconds.

In practice, this means that an app which makes a one second data transfer, three times a minute, will keep the wireless radio perpetually active, moving it back to high power just as it is entering standby mode.

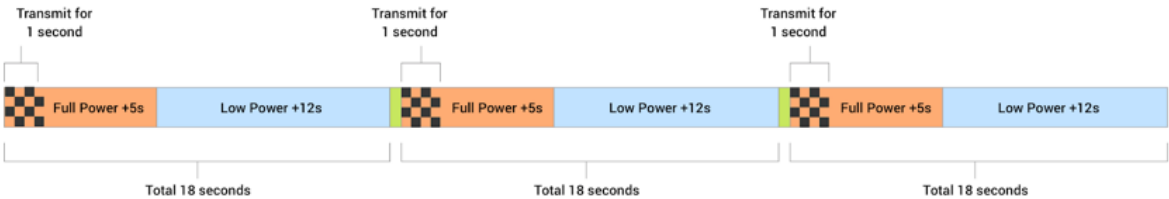


Figure 2. Relative wireless radio power use for one-second transfer running three times every minute. Figure excludes “power up” latency between runs.

By comparison, if the same app bundled its data transfers, running a single three-second transfer every minute, this would keep the radio in the high-power state for a total of only 20 seconds each minute. This would allow the radio to be on standby for 40 seconds of every minute, resulting in a significant reduction in battery consumption.

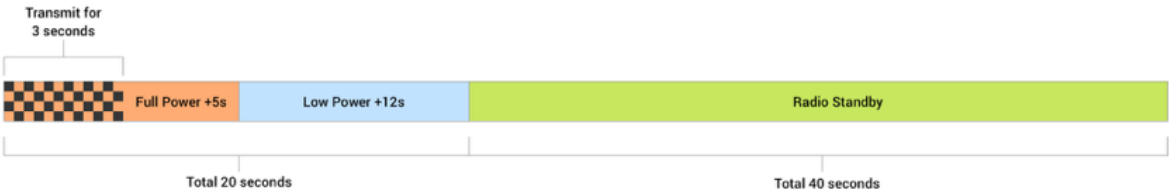


Figure 3. Relative wireless radio power use for three second transfers running once every minute.

Optimization techniques

Now that you understand how network access affects battery life, let's talk about a few things that you can do to help reduce battery drain, while also providing a fast and fluid user experience.

Bundle data transfers

As stated in the previous section, bundling your data transfers so that you're transferring more data less often is one of the best ways to improve battery efficiency.

Of course, this is not always possible to do if your app needs to receive or send data immediately in response to a user action. You can mitigate this by anticipating and [prefetching data](#). Other scenarios, such as sending logs or analytics to a server and other, non-urgent, app-initiated data transfers, lend themselves very well to batching and bundling. See [Optimizing app-initiated tasks](#) for tips on scheduling background network transfers.

Prefetch data

Prefetching data is another effective way to reduce the number of independent data transfer sessions that your app runs. With prefetching, when the user performs an action in your app, the app anticipates which data will most likely be needed for the next series of user actions and fetches that data in a single burst, over a single connection, at full capacity.

By front-loading your transfers, you reduce the number of radio activations required to download the data. As a result, you not only conserve battery life, but also improve the latency, lower the required bandwidth, and reduce download times.

Prefetching also provides an improved user experience by minimizing in-app latency caused by waiting for downloads to complete before performing an action or viewing data.

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	<div data-bbox="594 245 1829 803"> <p>Check for connectivity before making requests</p> <p>Searching for a cell signal is one of the most power-draining operations on a mobile device. A best practice for user-initiated requests is to first check for a connection using <code>ConnectivityManager</code>, as shown in Monitor connectivity status and connection metering. If there's no network, the app can save battery by not forcing the mobile radio to search. The request can then be scheduled and performed in a batch with other requests when a connection is made.</p> <p>Pool connections</p> <p>An additional strategy that can help in addition to batching and prefetching, is to pool your app's network connections.</p> <p>It's generally more efficient to reuse existing network connections than it is to initiate new ones. Reusing connections also allows the network to more-intelligently react to congestion and related network data issues.</p> <p><code>HttpURLConnection</code> and most HTTP clients, such as OkHttp, enable connection-pooling by default, and reusing the same connection for multiple requests.</p> </div>
<p>18. The wireless end-user device of claim 1, wherein the differential traffic control policy defines that the first one or more applications can only access a first one of the network types during particular time windows.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the differential traffic control policy defines that the first one or more applications can only access a first one of the network types during particular time windows.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>19. The wireless end-user device of claim 1, wherein the one or more processors are configured to classify that the particular application is interacting with the user in the device user interface foreground based on a state of user interface priority for the application.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are configured to classify that the particular application is interacting with the user in the device user interface foreground based on a state of user interface priority for the application.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>

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<p>20. The wireless end-user device of claim 1, wherein the second one or more applications are not subject to a differential network access control that is applicable to the first one or more applications.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the second one or more applications are not subject to a differential network access control that is applicable to the first one or more applications.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>21. The wireless end-user device of claim 1, wherein the one or more processors are further configured to classify between: user applications; system applications, utilities, functions, or processes; and operating system application, utilities, functions, or processes.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are further configured to classify between: user applications; system applications, utilities, functions, or processes; and operating system application, utilities, functions, or processes.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>22. The wireless end-user device of claim 1, wherein the second one or more applications or services comprises foreground services.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the second one or more applications or services comprises foreground services.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>23. The wireless end-user device of claim 1, wherein selectively deny comprises intermittently block when the one or more Internet service activities are requested during selected time windows.</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein selectively deny comprises intermittently block when the one or more Internet service activities are requested during selected time windows.”</p> <p><i>See, for example, the disclosures identified for claim 1.</i></p>
<p>24. The wireless end-user device of claim 1, wherein the one or more processors are configured to pre-</p>	<p>The Accused Instrumentalities comprise “[t]he wireless end-user device of claim 1, wherein the one or more processors are configured to prevent the first one or more applications from changing the power state of at least one of the modems, and to not prevent the second one or more applications from changing the power state of the same modem or modems.”</p>

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vent the first one or more applications from changing the power state of at least one of the modems, and to not prevent the second one or more applications from changing the power state of the same modem or modems.	<i>See</i> , for example, the disclosures identified for claims 1 and 17.